THE FLOWERING PLANTS OF SOUTH AFRICA.

A MAGAZINE CONTAINING HAND-COLOURED FIGURES WITH DESCRIPTIONS OF THE FLOWERING PLANTS INDIGENOUS TO SOUTH AFRICA.

EDITED BY

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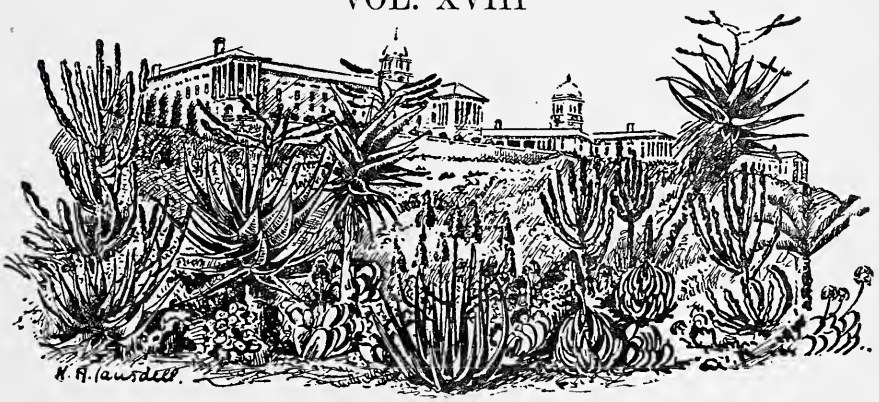

The veld which lies so desolate and bare
Will blossom into cities white and fair,
And pinnacles will pierce the desert air,
And sparkle in the sun.

R. C. MACFIE'S "EX UNITATE VIRES."

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TO

LADY FLORENCE PHILLIPS

OF

VERGELEGEN, SOMERSET WEST,

AND

TO THE MEMORY OF SIR LIONEL PHILLIPS THIS VOLUME IS GRATEFULLY DEDICATED IN RECOGNITION OF THEIR UNSTINTED PUBLIC SERVICE TO ART AND SCIENCE AND IN PARTICULAR OF THE SUPPORT WHICH THEY GAVE TO THE GREAT NATIONAL PROJECTS FOR THE PRESERVATION OF PLANT AND ANIMAL LIFE IN THIS LAND.

DIVISION OF PLANT INDUSTRY, PRETORIA,
October, 1938.

C. Letty del

Plate 681.

TRICHOCAULON Marlothii *forma*

Namaqualand.

Asclepiadaceae. Tribe Stapelieae.

Trichocaulon *N. E. Br.* in *Journ. Linn. Soc.* vol. 17, p. 164.

Trichocaulon Marlothii *N. E. Br.* in *Fl. Cap.* vol. 4, sect. 1, p. 894.

In the original description of the species, the author states that the collector (Dr. R. Marloth) gives the colour of the flower as "dark purple brown." So far we have not seen a specimen to match that description exactly. The plant figured differs from the typical form only in the colour of the corolla, which is pale green, very prettily spotted with dark red spots, and has a dark rim to the corolla-lobes. The spots are arranged round the edges of the lobes, leaving a fairly clear area at the centre towards the base.

Our plant is related to *Trichocaulon simile* (see Plate 620), in which, however, the corolla is cup-shaped and encloses the corona. In our plant the corolla is saucer-shaped and the corona not completely enclosed. It differs from that species also in having spreading bipartite outer corona-lobes, with the segments strongly diverging and approaching the segments of the adjacent lobes to form mandible-like structures behind the inner corona-lobes. In *T. simile* the outer corona-lobes are described as 3-fid and more or less erect, but this interpretation of the outer corona is incorrect. As in *Stapelia* and other related genera, the outer corona-lobes alternate with the inner corona-lobes. In some species of *Trichocaulon*, such as the two mentioned above, the outer corona-lobes are divided down the centre almost to the base into two segments. Each of these segments appears more closely connected with a segment from the adjoining lobes, than with the segment from the same lobe, and are united to the base of the inner corona-lobes. This gives the impression that the outer corona-lobes are opposite the inner corona-lobes.

In *T. simile* there is also a process from the outer corona which alternates with its lobes. That process with the segments from adjacent lobes gives the false impression of the outer corona-lobes being 3-partite.

From *T. keetmanshoopense* Dinter our plant differs principally in the smaller flowers, the rather shorter than broad corolla-lobes, and in the plant being yellowish-green, not greyish-green as in this species.

The specimen we figure was collected in Namaqualand by Mr. J. E. Roux, and grown at the Division of Plant Industry, Pretoria.

Description :—Dwarf succulent, branched just at surface of the soil. *Branches* yellowish-green, 5 cm. long, 3·3 cm. diameter, cylindric-ovoid, tubercled; tubercles 4–5 mm. diameter, with a central depression containing a small tooth-like projection. *Flowers* solitary towards the end of the plant body. *Buds* green with small red spots, flat-topped and produced into a short blunt point. *Corolla* pale green spotted with dark red, 7·5 mm. diameter, saucer-shaped, lobed about $\frac{1}{2}$ way; lobes with a dark red margin, spotted with the spots arranged so as to leave a fairly clear area at the base of the lobes, 1·5 mm. long, 2·5 mm. broad, ovate, obtuse. *Outer corona-lobes* pale green marked with red, 2-fid, with the teeth 0·7 mm. long, strongly diverging so that the tooth of one lobe approaches the tooth of the adjacent lobe to form a mandible-like structure; inner corona-lobes pale green, bordered with red, 0·75 mm. long, linear, incumbent on the anthers and produced beyond in a small connivent erect column with the tips sometimes slightly diverging. [I.C.V. National Herbarium, Pretoria, No. 22813.]

Plate 681.—Fig. 1, corona.

G.J Lewis del.

Plate 682.

HESPERANTHA pauciflora.

Namaqualand and Cape Province.

Iridaceae. Tribe Ixieae.

Hesperantha *Ker. in Koen. et Sims, Ann. Bot.* i. 224; *Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 702.

Hesperantha pauciflora (*Baker*) *Lewis*, comb. nov.—*Tritonia pauciflora, Baker* in *Handb. Irid.* 193.

Little Namaqualand; mountains near 'Naries, 3400 ft., *Bolus* 6622 !

This is the first species of this large and widespread genus to be figured in these volumes. At present there are about forty described species, and a great many still awaiting attention. They are entirely African, and are found all round the coastal belt of South Africa, from Namaqualand to Natal, inland on the Karroo and northwards to the Transvaal, as well as a few in Tropical Africa. The very delicate flowers are often sweetly scented and do not open until the sun has lost its mid-day strength, or even sometimes until it is setting.

Baker has placed this species in the genus *Tritonia*, but, on examining his type specimens at Kew, I found that the flowers, with their long style-branches unmistakably spreading from the throat of the perianth-tube, are typical of the genus *Hesperantha*, and that the type-plants exactly match specimens collected by Mrs. L. Bolus and Mr. H. Buhr at Nieuwoudtville, in the Calvinia Division. The plant figured here is one which was sent by Mr. Buhr to the National Botanic Gardens, Kirstenbosch, where it flowered in July 1933, the plants varying in size from 12 to 35 cm. high.

The corm shown in this figure is a type very commonly found in *Hesperantha*, cone-shaped above but quite flat at the base, the hard, crustaceous, brown tunics splitting upwards and ending in short bristles at the top, while at the base they are distinctly and sharply pointed. The flowers in a large

number of the species are small and rather insignificant, the present one being among the more showy members of the genus. Very often the flowers have the lower surface of the three outer perianth-segments suffused with a red or reddish-brown colour, the plant figured here showing this quite clearly.

DESCRIPTION :—*Plant* 12–35 cm. high, the stem simple or branched, 2 mm. diameter, entirely glabrous. *Corm* cone-shaped above, the base flat, tunics brown, rigid, lacerated from the base upwards, 1·5 cm. diameter. *Basal sheath* colourless, 2·8 cm. long. *Leaves* 3 basal, 12–16·5 cm. long, up to 7 mm. broad, fairly firm in texture, the veins slightly raised; 1 cauline leaf, 13·5 cm. long, sheathing the stem except for 3·5 cm. at the apex, the sheathing portion slightly inflated, distinctly ribbed. *Inflorescence* a lax spike, 2–4-flowered. *Bract* 2 cm. long, 6 mm. broad, green and herbaceous, streaked with red. *Bracteoles* similar to bract, 1·5 cm. long, 5 mm. broad. (Bract and bracteoles become membranous and dry fairly soon.) *Flowers* pale mauve-pink, 3 outer perianth-segments red on the lower surface; *perianth-tube* slender, not exserted from the bracts, 8 mm. long; outer segments 2·3–2·8 cm. long, 6–8 mm. broad; inner segments 1·8–2·2 cm. long, 8–10 mm. broad, the outer patent, the inner sub-erect. *Stamens* reaching half way up segments, anthers longer than filaments 9 mm. long. *Style-branches* about equalling, or slightly exceeding, the height of the stamens. Bolus Herbarium (National Botanic Gardens, No. $\frac{591}{33}$) plant figured; Bolus Herbarium, No. 21241.—G. J. LEWIS.

PLATE 682.—Fig. 1, flower, broad segments; 2, flower, longitudinal section; 3, flower, narrow segments; 4, flower, longitudinal section; 5, bract; 6, bracteoles; 7, outer perianth-segment; 8, inner perianth-segment; 9, outer segment; 10, inner segment—nat. size; 11, stamen × 2; 12, gynaecium, nat. size.

F.P.S.A., 1938.

W.F. Barker del.

Plate 683.

Nerine hesseoides.

Cape Province.

Amaryllidaceae. Tribe Amarylleae.

Nerine *Herb.*; *Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 728.

Nerine hesseoides *L. Bolus*, sp. nov.

Planta glabra, 17–25 cm. alta. *Bulbus* ovatus, ad 3 cm. longus, 1·7 cm. diam., in collum productus; tunicae exteriores tenuissime papyraceae. *Folia* 2–7, synantha, linearia, supra plana vel leviter sulcata, dorso rotundata, ad 18 cm. longa, 1–1·5 mm. lata. *Pedunculus* teres, 2 mm. diam. *Spathae valvae* ad 2·5 cm. longae. *Umbella* centripetens, 6–14-flora. *Pedicelli* adscendentes vel erecti, 2–3 cm. longi. *Perianthii segmenta* regulariter disposita in modo generis *Hesseae*, linearia, superne ampliata, prope medium latissima, obtusa, marginibus in dimidio inferiore praecipue undulatis, saepius ad 1 cm. lata, ad 3·5 mm. lata. *Filamenta* primum decurvata, deinde erecta, demum subregulariter disposita, inaequilonga, 4–5·5 mm. longa, basi appendiculata, appendicibus fere ad basin liberis superne subpatentibus angustis acuminatis saepius integris ad 2 mm. longis; antherae ante dehiscentes 1–2 mm. longae. *Stigma* minute lobatum; stylus primum decurvatus, demum sursum versus; ovarium primum acute triangulum, 1·5–2 mm. longum, 1·5 mm. diam. *Capsula* globosa, 6 mm. diam.

Griqualand West; Hay Div., Rocklands, March 1931, *Miss E. M. Turner* (McGregor Museum, No. 2704).

There are four allied species of *Nerine* occurring in the North which have now all been figured in " Flowering Plants," namely, *N. Rehmannii* L. Bolus (Plate 120—under the synonym *Hessea Rehmannii*, Baker) and *N. transvaalensis*, L. Bolus (Plate 132—under the name *N. Frithii* L. Bolus, with which it was at that time identified) in the Transvaal, and *N. Frithii* L. Bolus (Plate 132) and *N. hesseoides* L. Bolus from Griqualand West. They are all glabrous, and have in common slender synanthous leaves, flowers which rank among the smallest in the genus, and perianth-segments distinctly broadest near the middle, with their margins closely and conspicuously undulate in the lower part and obscurely so upwards. *N. Rehmannii* is readily distinguished by its

white perianth and exappendiculate filaments; *N. transvaalensis* has narrower perianth-segments and longer and more slender filaments than *N. Frithii* and *N. hesseoides*; and finally *N. hesseoides* differs from *N. Frithii* in its smaller flowers, with the perianth actinomorphic throughout the whole life of the flower, and entire stamen-appendages which are separate from one another almost to the base.

The drawing was made from one of Miss Turner's plants which flowered in our garden in February 1932. The species, however, was first collected by Miss M. Wilman in 1923 at Inglewood in the Hay Division, "on limestone." (McGregor Museum, No. 2364.)

DESCRIPTION :—*Plant* glabrous, 17–25 cm. high. *Bulb* ovate, up to 3 cm. long, 1·7 cm. diameter, produced into a neck; outer tunics thin and papery. *Leaves* 2–7, synanthous, linear, flat or slightly sulcate above, rounded below, up to 18 cm. long, 1–1·5 mm. broad. *Peduncle* terete, scarcely 2 mm. diam. *Spathes* up to 2·5 cm. long. *Umbel* centripetal, 6–14-flowered. *Pedicels* ascending or erect, 2–3 cm. long. *Perianth-segments* regularly placed as in the genus *Hessea*, linear, widened upwards, broadest near the middle, obtuse, margins conspicuously undulate in the lower part, usually up to 1 cm. long, up to 3·5 mm. broad. *Filaments* at first decurved, then erect, finally almost regularly disposed in the flower, unequal in length, 4–5·5 mm. long, appendiculate at base, the appendages almost free to the base, somewhat spreading upwards, narrow, acuminate, usually entire, up to 2 mm. long; anthers before dehiscence 1–2 mm. long; pollen whitish. *Style* at first decurved, finally curved upwards; stigma minutely lobed. *Ovary* at first acutely angled, 1·5–2 mm. long, 1·5 mm. diameter. *Capsule* globose, 6 mm. diameter.—L. BOLUS.

PLATE 683.—Fig. 1, front view of flower, × 3; 2, section of very young flower; 3, androecium and gynaecium; 4, do., older flower; 5, back view of stamen; 6, front view of same; 7, gynaecium, × 6; 8, tranverse section of leaf, × 9.

W.F. Barker del

PLATE 684.

HOMERIA PILLANSII.

Cape Province.

IRIDACEAE. Tribe MOREAE.

HOMERIA *Ventenat Dec. Gen. Nov.* 5 (1808); *Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 692.

Homeria Pillansii *L. Bolus*, sp. nov.

Planta robusta, 73 cm. alta, caule 6 mm. diam. *Folium productum* 1, basale, inferne caulem amplectens, deinde recurvatum, dumosum, laxissime spiraliter 1-tortum, conduplicatum, longe attenuatum, apice teres induratumque, glauco-viride supra, medio pallide vittatum, nervo medio vix prominente, nervis lateralibus 3–6 plus minusve prominentibus, 90 cm. longum, ad 2·7 cm. latum; folia caulina 2, spathiformia, acuminata, apice tantum membranacea, in axillo cymas 2 gerentia, ad 9·5 cm. longa. *Cyma* 6-fl., pedunculo 8–15 cm. longo. *Spathae valvae* herbaceae sinon apice membranaceo, in setam attenuatae, carinatae, nervis vix visis, exteriores ad 7 cm., interiores ad 10 cm., longae. *Perianthii segmenta* apice subrotundata late emarginata, unguibus erectis, approximatis, itaque quasi tubum 8 mm. longum formantibus, ad tubum staminale adpressis, laminis luteis, genu aureo sordideque olivaceo maculato, exterioribus brevissime unguiculatis suboblongis, ad 4·2 cm. longis, parum supra medium leviter ampliatis, ad 1·7 cm. latis, interioribus graciliter unguiculatis, ungue 3 mm. longo, lamina subcuneate obovata, ad 3·4 cm. longa, ad 1·3 cm. lata. *Filamenta* 1·1 cm. longa, per 8–9 mm. connata, e tubo per 6 mm. exserta, glabra; antherae recurvatae basinque cristarum attingentes, 8 mm. longae. *Styli rami* 1 cm. longi, apice stigmatifero undulato irregulariterque denticulato 4 mm. lato; cristae intus patentes, semi-lanceolatae, acuminatae, apicibus vicinis contiguis vel interdum subintertextis, 5 mm. longae. *Ovarium* 1·5 cm. longum, 2 mm. diam.

CAPE PROVINCE: Ceres Div., Gydouw Pass, Oct. 1929, *N. S. Pillans* (Bolus Herbarium, No. 19882.)

Our species is closely allied to *H. Marlothii*, L. Bolus, in its robust habit of growth and height, as well as in having the single broad basal leaf, perianth-segments appressed to the staminal tube, and well-developed stigma-crests, all three of which latter characteristics being also found in *H. Cookii* L. Bolus (see Plate 306). But the leaf of *H. Pillansii* is only about half as wide as that of *H. Marlothii*; the larger,

differently shaped, brighter yellow perianth-segments are more or less obliquely set above the claw, the sides of the blades being usually decurved or deflexed, and the inner ones having a half-spiral twist, all being broadest above the middle, whereas the outer ones in *H. Marlothii* are distinctly broadest below the middle; and the filaments are not entirely united as in *H. Marlothii*.

The type is Mr. N. S. Pillans' collection on the Gydouw, near Ceres, in October 1929. One of the corms flowered in my garden during September and October 1931, when the drawing was made.

DESCRIPTION :—*Plant* robust, 73 cm. in height, the stem 6 mm. in diameter. *Produced leaf* solitary, basal, the lower part embracing the stem, the free part recurved, the upper portion lying on the ground, very laxly spirally twisted once, conduplicate, tapering very gradually, the apex terete and hardened, greyish green, the upper surface with a pallid stripe down the middle, the midrib scarcely prominent, 3–6 lateral nerves more or less prominent, 90 cm. long, up to 2·7 cm. broad; cauline leaves 2, spathe-like, acuminate, membranous at the apex only, bearing 2 cymes in the axil, up to 9·5 cm. long. *Cyme* 6-flowered, the peduncle of the cyme 8–15 cm. long. *Spathe-valves* herbaceous except for the membranous apex, attenuated into a bristle, keeled, nerves scarcely visible, outer valves up to 7 cm., inner up to 10 cm., long. *Perianth-segments* somewhat rounded at the apex, broadly emarginate, the claws erect, approximate, and thus forming a quasi-tube 8 mm. long and appressed to the staminal tube, the blades yellow, golden and spotted with dull olive on the knee, the exterior segments very shortly clawed, somewhat oblong, up to 4·2 cm. long, widened a little above the middle and there up to 1·7 cm. broad, the inner having a slender claw 3 mm. long, the blade somewhat cuneately obovate, up to 3·4 cm. long, up to 1·3 cm. broad. *Filaments* 1·1 cm. long, connate for 8–9 mm., exserted from the perianth-tube for 6 mm., glabrous; anthers recurved and reaching to the base of the crests, 8 mm. long. *Style-branches* 1 cm. long, the stigmatiferous apex undulate and irregularly denticulate, 4 mm. broad; crests spreading inwards, semi-lanceolate, acuminate, the adjacent apices contiguous or sometimes somewhat intertwined, 5 mm. long. *Ovary* 1·5 cm. long, 2 mm. diameter.

PLATE 684.—Fig. 1, portion of plant, × ⅓; 2, lower portion of stem with leaf-sheath; 3, apical part of leaf; 4, portion of leaf from the middle of the blade; 5, transverse section of leaf, × 3; 6, flower, oblique view; 7, ditto, side view; 8, outer perianth-segment; 9, inner perianth-segment; 10, androecium and gynaecium, × 3; 11, ditto, viewed from above, × 6; 12, androecium, × 3; 13, style-branch, back view, × 3; 14, ditto, front view, × 3.

F.P.S.A., 1938.

G J. Lewis del.

Plate 685.

BABIANA CUNEIFOLIA.

Namaqualand.

Iridaceae. Tribe Ixieae.

Babiana *Ker ; Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 706.

Babiana cuneifolia *Baker* in *Journ. Linn. Soc.* xvi. 165; *Handb. Irid.* 182.

Three species of *Babiana* have already been figured in these volumes, two of them, *Babiana obliqua* Phillips (Plate 357) and *Babiana subglabra* Lewis (Plate 545) fairly closely allied and representing the type of plant more commonly found in the genus. *Babiana brachystachys* Lewis (Plate 546) which has a long perianth-tube and rigid, terete leaves, is entirely different from these. The species figured here, *Babiana cuneifolia* Baker, is a remarkably interesting one and differs very perceptibly from those already mentioned. The leaves, which are truncate and only appear an inch or two above the ground, give the appearance of having been eaten off by sheep. Anyone finding the plants in the wild would, without examining them carefully, come to this conclusion, as the country in which they grow, near Garies, Little Namaqualand, is very extensively grazed by sheep. The apical margin, however, is rough, brown and shortly pilose, the slightly plicate blades being covered with short hairs as well.

The plant figured here was grown at the National Botanic Gardens, Kirstenbosch, where several specimens flowered during June and July 1933, the leaves all retaining their unusual character. They were collected, not in flower, growing in hard sand on a slope just outside Garies, in September 1932, by the writer.

Description :—*Plant*, including corm and flowers, 21·5 cm. high, with the portion above ground about 9 cm. high, and with the inflorescence overtopping the leaves. *Corm* globose, 4 cm. diameter, covered with numerous fibrous

tunics extending upwards in a neck about 10 cm. long. *Leaves* truncate, 5 leaves produced; the blade up to 4 cm. long and 2·5 cm. broad, slightly plicate, very shortly pilose, with the apical margin rough, brown and shortly pilose; 1 cauline leaf, or bract, in axis of which 2 spikes arise, the second one subtended by 2 bracteoles. *Inflorescence* a dense spike, 8–6·5 cm. long, 10–6-flowered. *Bract* green and herbaceous brown, at the apex 3·8 cm. long, 1·4 cm. broad, minutely pilose and faintly veined. *Bracteoles* central part green and herbaceous, the margins white and membranous, 3·2 cm. long, 1·3 cm. broad, fused except for the 2 brown tips. *Perianth-tube* well exserted from the bract, curved and with a definite bend or "knee" near the top, 5 cm. long, about 9 mm. in diameter at the throat; segments purple; the 3 lower marked with red and the 2 inner lower segments having a white semi-circular mark above the red; upper segment 2 cm. long, 7 mm. broad, with the 2 side segments 2 cm. long, 5·5 mm. broad, minutely cuspidate; lowest segment 1·7 cm. long, 5 mm. broad; lower side-segments 1·7 cm. long, 6·5 mm. broad; segments all obtuse or sub-obtuse. *Stamens* reaching two-thirds way up segments. *Gynaecium* with style-branches just overtopping stamens. (Bolus Herbarium, No. 22162).—G. J. Lewis.

Plate 685.—Fig. 1, flower, front view; 2, flower, side view; 3, flower, longitudinal section; 4, bract; 5, bracteoles; 6, upper segment; 7, upper side-segment; 8, lower side-segment; 9, lowest segment; 10, stamen; 11, gynaecium—nat. size.

F.P.S.A., 1938.

G J. Lewis del.

PLATE 686.

BABIANA SPIRALIS.

Cape Province.

IRIDACEAE. Tribe IXIEAE.

BABIANA *Ker; Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 706.

Babiana spiralis *Baker* in *Handb. Irid.* 183.

With a few exceptions all the species in this genus are low-growing, compact sturdy plants with a comparatively long portion of the stem below the ground very often, and a short portion of the stem, or only the flowering axis, which is sometimes branched, above. The species figured here represents a taller, more graceful and more laxly branched member of the genus and, indeed, it very closely resembles the plants named *Gladiolus striatus Jacq.*, except that the leaves of *Babiana spiralis* are very narrow, plicate, glabrous, have entire margins and twist spirally towards the apex, whereas in *Gladiolus striatus* the margins of the leaves are crisped, and, although the leaves are broader, they are pilose, but not plicate. In my opinion the plants named *Gladiolus striatus* belong to the genus *Babiana*, and would be better placed next to *Babiana spiralis*. The corm is typical of this genus, having numerous soft, wiry tunics extending upwards to form a neck.

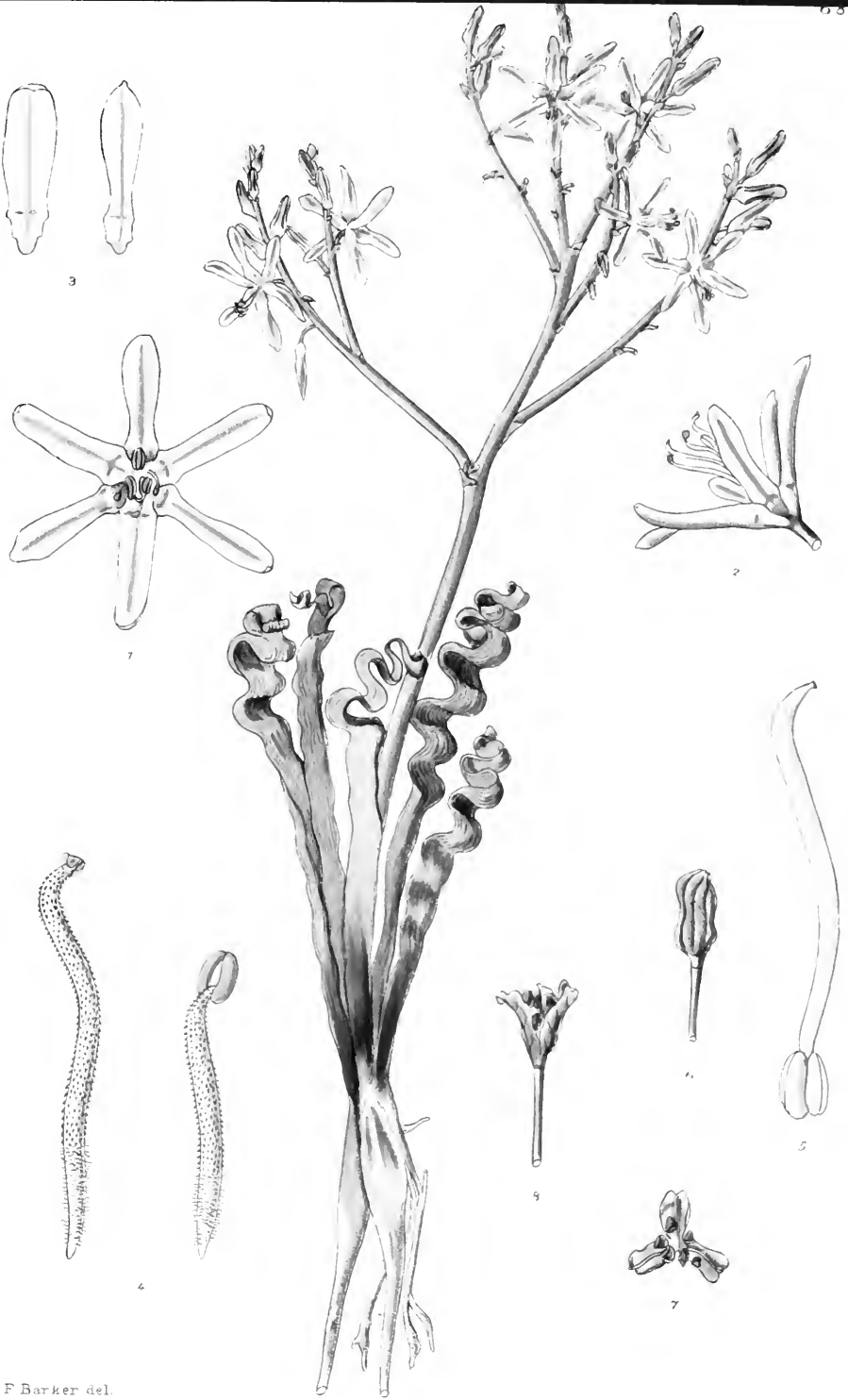
Babiana spiralis was found flowering freely and growing in thick yellow sand at Klaver, Van Rhynsdorp Division, in August 1932, by the writer. It flowered again at the National Botanic Gardens, Kirstenbosch, during August 1933, when the drawing was made. The rather delicate flowers change from blue to pale mauve and pink as they mature and fade. The margins of the three inner perianth-segments are somewhat crisped.

DESCRIPTION:—*Plant*, including corm, 37 cm. high, 21·5 cm. above ground. *Corm* ovoid, 2·2 cm. in diameter; tunics of numerous, soft, matted fibres extending up in a neck 7 cm.

long. *Leaves* 8–10, up to 40 cm. long, 1–3 mm. broad, very narrow, linear or sub-terete, firm, twisting spirally towards the apex, plicate, glabrous except for the sheathing portion which is sometimes slightly pilose, overtopping the inflorescence. *Stem* pubescent, somewhat flattened, bearing 3–7 lateral branches. *Inflorescence* a secund spike, terminal and lateral spikes 6–9-flowered. *Bract* green and herbaceous, the apex a brown cusp, 1·1 cm. long, 6 mm. broad; bracteoles fused in lower half, free above, green and herbaceous, a brown scariose cusp at apex of each, 9 mm. long, 6 mm. broad. *Flowers* changing from blue to pink as they fade, 3 lower segments marked with yellow, margins of 3 inner segments crisped, segments obtuse, 3 inner minutely cuspidate. *Perianth-tube* 1 cm. long; upper perianth-segment arched and distinct from the other 5, 2·8 cm. long, 1·1 cm. broad; 2 upper side segments 1·9 cm. long, 6 mm. broad; 2 lower side segments 1·4 cm. long, 6 mm. broad; lowest segment 1·5 cm. long, 5·5 mm. broad. *Stamens* arched, 2·3 cm. long. *Style-branches* over-topping anthers. (Bolus Herbarium, No. 22161.)—G. J. Lewis.

Plate 686.—Fig. 1, flower, front view; 2, flower, side view; 3, flower, longitudinal section; 4, bract; 5, bracteoles; 6, upper perianth-segment; 7, upper side-segment; 8, lower side-segment; 9, lowest segment; 10, stamen; 11, gynaecium—nat. size.

F.P.S.A., 1938.



W F Barker del.

Plate 687.

Anthericum Salteri.

Namaqualand.

Liliaceae. Tribe Asphodeleae.

Anthericum *Linn. Gen. n.* 380; *Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 788.

Anthericum Salteri *Leighton*, sp. nov. (§ Trachyandra.)

Tuber crassum, saepius 2, 5 cm. longum. *Folia* 3–6, saepius 5, transverse ad 14-plicata, inferne plicantibus demum obscuris, 15–20-nervata, nervis leviter prominentibus, viridi-glauca, 7–10 cm. longa, 1–1·5 cm. lata. *Planta* 18–20 cm. alta. *Pedunculus* rigidus, nudus, glauco-viridis. *Panicula* laxe ramosa; rami 8–10 cm. longi. *Bracteae* parvae. *Pedicelli* adscendentes, 3 mm. longi. *Perianthium* 2 cm. diam., *segmentis* oblanceolatis pallide carneis viridi nervatis 9 mm. longis exterioribus ad 3 mm. interioribus ad 2 mm. latis. *Stamina* declinata, filamentis scabris basi hirsutis exterioribus 8 mm. interioribus 6 mm., longis; antherae 1 mm. longae. *Ovarium* parvum, 1·5 mm. longum. *Stylus* declinatus, glaber, staminibus longior. *Stigma* capitellatum.

Little Namaqualand: near Springbok, June 1931, *Salter* 966 *in Bolus Herbarium.*

Anthericum Salteri was collected by Paymaster-Captain T. M. Salter near Springbok in June 1931, and flowered at Kirstenbosch in September of the same year. Further material of the species has since been collected by Mr. P. Ross Frames in the Van Rhynsdorp district.

This species is characterised by the unusually broad erect leaves which are transversely folded, for as many as fourteen times in one case, and its strongly scented flowers.

The genus *Anthericum* has not previously been figured in this work; but many species were shown in the works of Jacquin and Redoute more than a hundred years ago.

Description:—*Tubers* thick and fleshy, usually 2, 5 cm. long. *Plants* 18–20 cm. high. *Leaves* 3–6, usually 5, 7–10 cm. long, 1–1·5 cm. broad, transversely plicate, with the folds up to 14, less marked towards the base of the leaf, with

slightly prominent veins, glaucous green. *Peduncle* rigid, naked, glaucous. *Panicle* laxly branched; branches 8–10 cm. long. *Bracts* minute. *Pedicels* ascending, 3 mm. long. *Perianth* 2 cm. in diameter when fully open; *segments* pale flesh pink keeled with green, 9 mm. long oblanceolate; outer up to 3 mm.; inner up to 2 mm. broad. *Stamens* declinate, filaments scabrous, hairy at the base; outer 8 mm., inner 6 mm. long; anthers 1 mm. long. *Ovary* small, 1·5 cm. long, style declinate, glabrous, a little longer than the stamens; stigma capitate.—F. M. Leighton.

Plate 687.—Fig. 1, front view of flower; 2, do., side view; 3, perianth-segments, × 3; 4, androecium; 5, gynaecium, × 8; 6, 7, 8, fruit, × 3.

F.P.S.A., 1938.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W.F. Barker del

Plate 688.

Geissorhiza namaquensis.

Little Namaqualand.

Iridaceae. Tribe Ixiaea.

Geissorhiza *Ker-Gawl*; *Bot. Mag.* Pl. 672 (1803); *Benth. et. Hook. fil. Gen. Plant.* vol. iii. p. 703.

Geissorhiza namaquensis *Barker*, sp. nov.

Planta circa 26 cm. alta. *Cormus* globosus, basi truncatus, circa 2 cm. longus, 1–1·5 cm. diam., tunicis crustaceis saturate brunneis politis cuspidatis. *Folia* basalia 2, adscendentia, apice vero incurvata, linearia, superne attenuata, nervis 5–6 prominentibus utrinque pubescentibus pilis patentibus minutis, ad 16 cm. longa cum vagina roseo suffusa, ad 6 cm. longa, medio ad 5 mm. lata; caulinum 1, 9–12 cm. longum, medio 4 mm. latum. *Pedunculus* glaber, per 6–7 cm. exsertus, prope basin 1-ramosus, 1·5 mm. diam., rhachi flexuosa. *Spica* laxe 6-flora, ramo 2–4-fl. *Bracteae* oblongae, obtusae, herbaceae, margine tantum membranaceo rubro-brunneo, 1·4–0·9 cm. longae; bracteolae fere omnino coalitae, membranaceae, carinis viridibus, 1 cm. longae, basi 4 mm. latae. *Perianthii tubus* gracilis, apicem versus ampliatus, ad 3 mm. diam., viridi-albus, 9–10 mm. longus; segmenta patenti-incurva, concava, obtusa, leviter emarginata, saturate coerulea, basin versus alba, exteriora lineari-lanceolata, leviter emarginata, ad 1·8 cm. longa, 4–5 mm. lata, interiora oblongo-obovata, 1·6 cm. longa, 6–7 mm. lata. *Stamina* subarcuata, parum ultra dimidium segmenti attingentia, antheris luteis 6–7 mm. longis. *Ovarium* 3 mm. longum. *Stylus* unilateralis, staminibus brevior. *Stigmata* demum recurvata. Capsula globosa, angulis obtusis, glabra.

Little Namaqualand: Klipfontein, July 1931, *Phillips in Bolus Herbarium* No. 22163, typus.

Two collections of this species have been recorded from Little Namaqualand—namely, that of Dr. R. Marloth (6782) in the Richtersveld, in August 1925, and of Mrs. E. Phillips at Klipfontein in 1930. The latter sent corms to Kirstenbosch, and these flowered the following year at the end of July, when our drawings were made. It is among the earliest of the *Iridaceae* to flower, and lasts into September.

The relative length of the bract and the perianth-tube

(the latter in some cases is slightly exserted beyond the bract), as well as the actual length of the tube, would place *G. namaquensis* among the long-tubed species in the genus. Other distinguishing marks are the firm texture of the leaves and their closely set nerves, the almost entirely herbaceous bracts, the somewhat arcuate stamens, and the unilateral style.

DESCRIPTION :—*Plant* about 26 cm. high. *Corm* about 2 cm. long, 1–1·5 cm. diam., globose, truncate at the base; tunics crustaceous, dark brown, shining, cusped. *Basal leaves* 2, ascending, hairs spreading minute, up to 16 cm. long with the vagina suffused with pink up to 6 cm. long, 5 mm. broad at the middle, linear, attenuate towards the apex, and with the extreme apex incurved, with the nerves prominent, 5–6, pubescent on both sides; cauline leaf 1, 9–12 cm. long, 4 mm. broad at the middle. *Peduncle* glabrous, exserted for 6–7 cm., with one branch at the base, 1·5 mm. diameter; rachis flexuous. *Spike* lax, 6-flowered, branch 2–4-flowered. *Bracts* 1·4–0·9 cm. long, oblong, obtuse, herbaceous, with the margin membranous and reddish brown; bracteoles almost entirely fused, membranous, with green keels, 1 cm. long, 4 mm. broad at the base. *Perianth-tube* greenish-white, slender, widening towards the apex, up to 3 mm. diameter, 9–10 mm. long; segments deep blue, white towards the base, spreading incurved, concave, obtuse, slightly emarginate; exterior up to 1·8 cm. long, 4–5 mm. broad, linear-lanceolate, slightly emarginate; inner 1·6 cm. long, 6–7 mm. broad, oblong-obovate. *Stamens* subarcuate, a little longer than half the length of the segments; anthers yellow, 6–7 mm. long. *Ovary* 3 mm. long; style unilateral, shorter than the stamens; stigmas finally recurved. *Capsule* globose, with obtuse angles, glabrous.—W. F. BARKER.

PLATE 688.—Fig. 1, front view of flower; 2, longitudinal section of young flower; 3, do. of old flower; 4, inner perianth-segment; 5, outer perianth-segment; 6, bract; 7, bracteoles, × 2; 8, portion of leaf, × 4.


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PLATE 689.

WATSONIA ALPINA.

Transvaal.

IRIDACEAE. Tribe IXIEAE.

WATSONIA *Miller ; Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 705.

Watsonia alpina *Lewis*, sp. nov.; *Watsoniae transvaalensi*, Baker et *W. Strubeniae* L. Bolus (= *W. transvaalensi* Baker, var. *drakensbergensi* L. Bolus) affinis, sed ab illa caule ramoso, folio multo latiore, et spica longiore differt, et ab hac folio latiore, spica minus densiore, bracteis a caule omnino distinctis neque basi axem amplectentibus ut in *W. Strubeniae*.

Planta 80 cm. alta. *Caulis* 4–3 mm. diam., 3-ramosus, ramis 25, 38·5, et 25·5 cm. longis. *Cormus* (e 2 cormis compositus, altero hornotino, altero novello) 4·5 cm. diam., globosus, tunicis e fibris robustis parallelis compositis. *Vaginae basales* 2·5 et 9 cm. longae. *Folia basalia* 4, disticha, plana, basi arcte equitantia, erecta vel suberecta, interdum apicem versus semi-spiraliter torta, rigida, marginibus praecipue incrassatis luteisque, nervo medio leviter prominente, ensiformia, 25–37 cm., longa, ad 3·6 cm. lata; caulina 3, omnia in axillo ramum gerentia, 13·5, 7, et 2·5 cm. longa. *Inflorescentia* e spica sublaxa disticha composita, parte terminali 17-fl., 33 cm. longa, ramis 8–11-fl. *Bractea* 1·8–1·1 cm. longa, acuta, viridis herbaceaque in dimidio inferiore, superne brunnea, basi axem haud amplectens. *Bracteolae* bracteis similes, eis parum breviores. *Flos* 4·3 cm. longus; tubus perianthii infundibuliformis, curvatus itaque perianthium horizontale, 2 cm. longus, apice 8 mm. diam.; segmenta rosea, vittata, vitta saturate rosea, in segmentis 3 inferioribus optime visa; exteriora 2 cm. longa, 6·5 mm. lata, minute cuspidata, linearia, subacuta; interiora 2·1 cm. longa, 8 mm. lata, apice acuta. *Stamina* dimidium segmentorum attingentia, antheris lilacine purpureis 7 mm. longis. *Styli rami* primarii parum ultra stamina patentes, in perianthio inclusi.

TRANSVAAL: Lydenburg distr.: Mt. Anderson, alt. 6000 feet, *Galpin, in Bolus Herbarium* 22164.

The mountainous region in which it was found by Dr. E. E. Galpin, in March 1933, has suggested the specific epithet *alpina*. Only one clump was found in a valley bottom at the foot of the terminal peak, Mt. Anderson, near Lydenburg, at an altitude of 6000 feet. Corms were sent to the National Botanic Gardens, Kirstenbosch, where they flowered

in November of the same year, when the present drawing was made.

The rather small and delicate-looking pink flowers, each segment having a dark pink stripe running down the centre, present a striking contrast to the broad, strong leaves with their much-thickened yellow margins, and the robust corm which is coated with tough, wiry tunics.

Watsonia alpina is closely allied to *W. transvaalensis* Baker, and *W. Strubeniae* L. Bolus (= *W. transvaalensis* Baker var. *drakensbergensis* L. Bolus), but from the former it differs in having a much broader leaf, a branched stem and a much longer spike, while from *W. Strubeniae* it differs in having a broader leaf, a less dense spike and the bracts entirely free from the stem, whereas in *W. Strubeniae* the bracts clasp the stem at the base.

DESCRIPTION :—*Plant* 80 cm. high. *Stem* 4–3 mm. diameter, bearing 3 branches, 25, 38·5 and 25·5 cm. long. *Corm* (consisting of 2 corms, one giving rise to plant and one new) globose, 4·5 cm. diameter; tunics of strong parallel fibres. *Basal sheaths* 2, 5 and 9 cm. long. *Leaves* 4, basal, 25–37 cm. long, up to 3·6 cm. broad, distichous, flat, ensiform, tightly overlapping at the base, erect or sub-erect, sometimes with a half spiral twist towards the apex, rigid, with the margins very much thickened and yellow, and the mid-rib slightly prominent; 3 cauline leaves, each with a branch arising in its axis, 13·5, 7 and 2·5 cm. long. *Inflorescence* a fairly lax distichous spike; main spike 33 cm. long, 17-flowered; lateral spikes 8–11-flowered. *Bract* green and herbaceous in lower half, brown above, 1·8–1·1 cm. long, acute, not clasping the stem at the base; bracteoles similar to the bracts, a little shorter. *Flower* 4·3 cm. long. *Perianth-tube* 2 cm. long, 8 mm. diameter at the throat, infundibuliform, curved so that flowers are horizontal, segments a pale magenta pink with a deeper pink stripe running down centre of each, most distinct in the 3 lower; outer segments 2 cm. long, 6·5 mm. broad, minutely cuspidate, linear, sub-acute; inner segments 2·1 cm. long, 8 mm. broad, acute. *Stamens* reaching about half-way up segments; anthers mauve, 7 mm. long. *Style-branches* spreading just above stamens but not exserted from flower.—G. J. LEWIS.

PLATE 689.—Fig. 1, plant, $\frac{1}{4}$ nat. size; 2, corm; 3, upper portion of leaf; 4, inflorescence; 5, flower, front view; 6, flower, opened out; 7, bract; 8, bracteoles.

W. F. Barker del.

Plate 690.

COTYLEDON HIRTIFOLIUM.

Little Namaqualand.

Crassulaceae.

Cotyledon *Linn.*; *Benth. et Hook. fil. Gen. Plant.* vol. 1. p. 658.

Cotyledon hirtifolium *Barker*, sp. nov.

Planta 71 cm. alta vel ultra. *Rami* basi incrassati, glabri, 2·2 cm. diam., reliquis foliorum delapsorum induratis ad 8 mm. longis dense onusti, deinde pedunculoidei, glanduloso-pubescentes, 4 mm. diam., reliquis distantibus onusti. *Folia* circuitu variabilia, novella inferne fere semiteretia, demum oblanceolata vel obovata, basin versus angustata, supra ± canaliculata, utrinque pubescentia, 5–8 cm. longa, 1·2–3 cm. lata, per anthesin marcescentia, disarticulataque. *Panicula* parce ramosa, ad 12 cm. longa, pedicellis nutantibus, ad 7 mm. longis. *Calycis tubus* 1 mm. longus, segmentis lanceolatis acutis viridibus glandulosis 7 mm. longis. *Corollae tubus* obtuse 5-angularis, parum infra medium leviter constrictus, extus viridi-luteus, intus laete viridis, 1·4 cm. longus, basi 6 mm., apice 9 mm. diam.; segmenta dimidio superiore demum recurva, obovata, emarginata, supra glabra, alba, 8 mm. longa, 5 mm. lata. *Stamina* corollae tubo aequilonga, fere ad dimidium adnata, parum infra medium pubescentia, filamentis post dehiscentiam apicem versus reflexis; antherae luteae, ad 2 mm. longae. *Squamae* quadratae, emarginatae, viridi-albae, vix 1 mm. longae. *Gynaecium* 1·2 cm. longum, prope basin 3·5 mm. diam.; styli graciles; stigmata minuta.

Little Namaqualand: Kommaggas, Dec. 1931, *Herre in Bolus Herbarium* No. 22165.

Our *Cotyledon* is best placed in the *Paniculatae* with *C. Eckloniana* Harv., from which it differs chiefly in having larger glandular pubescent flowers, with *C. Wallichii* Harv., which has terite glaucous leaves, unlike those of our plant, and with *C. paniculata*, L.f., which seems to be its closest ally on account of its broad flat leaves that are said to be pubescent in their younger stages. In our plant the leaves are distinctly pubescent even in the old stages, and, as this character is unique for the group, it has suggested the specific name. The stamens, too, in this plant are distinctive, being included

in the corolla-tube, while those of *C. Wallichii* and *C. paniculata*, are well exserted in the open flower.

DESCRIPTION :—*Plant* 71 cm. high. *Branches* fleshy, 2·2 cm. diameter, glabrous, densely covered with hardened prominent leaf-bases up to 8 mm. long, with the peduncle terminal, glandular-pubescent, 4 mm. diameter, with a few persistent remains of reduced leaves. *Leaves* disarticulating at flowering time, 5–8 cm. long, 1·2–3 cm. broad, variable in shape; young leaves often semiterete at the base; older leaves oblanceolate or obovate, narrow towards the base, and channelled above, pubescent on both sides. *Panicle* sparsely branched, up to 12 cm. long; pedicels pendulous, 7 mm. long. *Calyx-tube* 1 mm. long; segments green, 7 mm. long, lanceolate acute, glandular-pubescent. *Corolla-tube* yellowish-green on the outside, bright green inside, 1·4 cm. long, 6 mm. diameter at the base, 9 mm. diameter at the apex, obtusely 5-angled, constricted a little below the middle; segments white above, 8 mm. long, 5 mm. broad, recurved in the upper half, obovate, emarginate, glabrous. *Stamens* as long as the corolla-tube; filaments adnate almost to the middle, pubescent a little below the middle, with the apices reflexed after dehiscence; anthers yellow, 2 mm. long. *Squamae* greenish white, scarcely 1 mm. long, quadrate, emarginate. *Gynaecium* 1·2 cm. long, 3·5 mm. diameter near the base; style slender; stigma minute.

PLATE 690.—Fig. 1, side view of flower; 2, front view of flower; 3, corolla laid out to show the arrangement of the stamens; 4, gynaecium; 5, young leaf; 6, old leaf; 7, another do.

F.P.S.A., 1938.

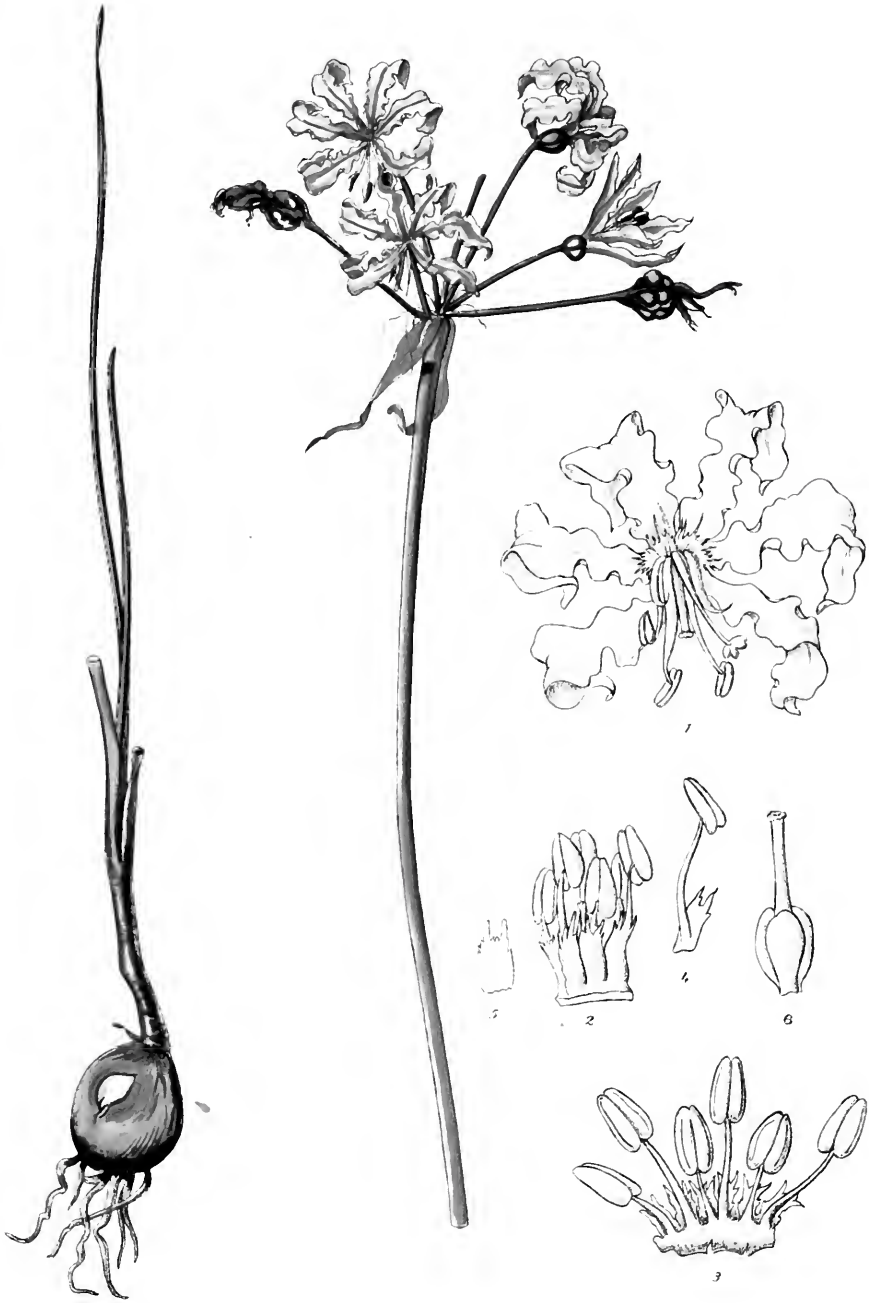

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Plate 691.

Nerine Frithii.*

Cape Province.

Amaryllidaceae. Tribe Amarylleae.
Nerine *Herb.*; *Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 728.

Nerine Frithii *L. Bolus* in *Ann. Bolus Herb.* vol. iii. p. 79 (Dec. 1921).

Plants of this species were sent to Kirstenbosch by Miss Wilman from Riverton in the Kimberley Division, and by Mr. Frith, without a locality, both in 1914. It was Mr. Frith's collection that survived until there was an opportunity of making the drawing which is reproduced here, and his plant must be considered the type of the species. Since *Nerine Frithii* was published, we have been able to study the genus as a whole more intensively than before from the ample living material that has flowered at Kirstenbosch during the last twelve years, and some of our former identifications require revision in the light of this additional knowledge. For example, we now believe the plant figured under Plate 132, although a very close ally of *N. Frithii*, is sufficiently different to rank as a distinct species (namely, *N. transvaalensis*), by reason of its narrower perianth-segments, longer and more slender filaments, and differently shaped stamen-appendages. Living material from the Orange Free State, at Hoopstad, is also very much wanted, so that this locality may be confirmed. Then there is the species which is said to grow "on islands in the Orange River," and is still too insufficiently known for determination, as well as the one from Gaberones in Bechuanaland (T.M. 28674) which in the National Herbarium bears a manuscript name.

* We have accepted this name given by Dr. Bolus, who is more familiar with the genus than we are, though we are not fully convinced that the plant is specifically distinct from the plant figured on Plate 132.

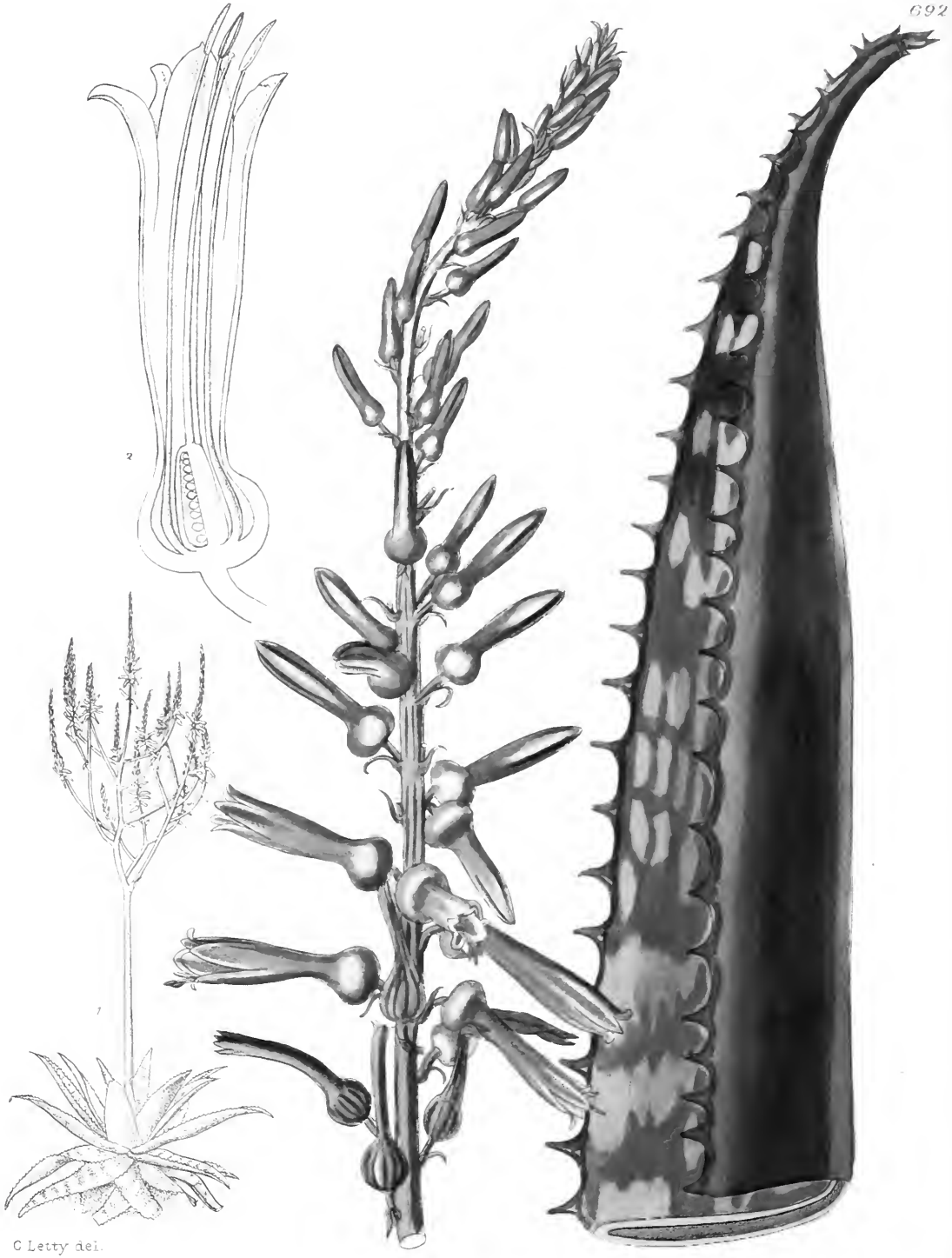
Correction.—In the text referring to Plate 683 of this Volume, the second reference to Plate 132 should have been to the accompanying Plate (No. 691).

DESCRIPTION :—*Plant* glabrous. *Bulb* ovoid-globose, 2 cm. long, 1·7 cm. diam. *Leaves* synanthous, usually 2, rather flaccid, somewhat filiform, concave above, up to 15 cm. long, 1–1·5 mm. broad. *Peduncle* terete, up to 20 cm. long. *Spathes* oblong-linear, long-attenuated, 2·5–3 cm. long. *Bracts* hair-like, membranous, 1–1·5 cm. long. *Umbel* 5–7-fl. *Pedicels* ad 3 cm. long. *Perianth-segments* widely spreading from the base, then strongly recurved, all finally lateral and posterior, the stamens and style only forming the anterior part of the flower, linear, obtuse or somewhat acute, margins conspicuously undulate below, to 1·6 cm. long, to 4 mm. broad near the middle. *Stamens* declinate; filaments 3·5–6 mm. long, the appendages oblong, incised, 3 mm. long; anthers before dehiscing 4 mm. long. *Ovary* obovate, the cells 2-ovulate; style finally 5 mm. long; stigma minutely lobed. *Capsule* globose, 8 mm. diam. (Bolus Herbarium, No. 22166.)—L. BOLUS.

PLATE 691.—Fig. 1, flower, front view, × 2½; 2, androecium and gynaecium from a bud; 3, androecium, laid open, inner view; 4, stamen, oblique view; 5, stamen-appendage, flattened; 6, gynaecium, × 4.

NERINE TRANSVAALENSIS L. Bolus, *N. Frithii* valde affinis, sed perianthii segmentis angustioribus brevioribusque, filamentis gracilioribus longioribusque, appendicibus dissimilibus distinguitur—*N. Frithii* L. Bolus, partim, ante Plate 132.

F.P.S.A., 1938.



C Letty del.

Plate 692.

ALOE deWetii.

Zululand.

Liliaceae. Tribe Aloineae.

Aloe *Linn.*; *Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 776.

Aloe deWetii, *Reynolds* in *Journ. S.A. Botany,* July 1937, p. 139.

The plant figured on the accompanying Plate is one of the summer-flowering species of maculate *Aloe*, found in fairly large numbers in Zululand. It occurs in the Umkuzi Valley, 26 miles east of Vryheid, also near Ingwavuma, Hlabisa, and Nongoma. In mature specimens the inflorescence reaches a height of 6–8 feet, and the leaves are characterised by a peculiar dull glossy appearance, as if rubbed with an oily cloth.

Aloe deWetii is allied to *A. Lettyae* Reynolds, but the latter has greener leaves with much smaller marginal teeth, laxer and more broadly cylindric racemes, and flowers with a more globose swelling at the base. Another ally is *A. komatiensis* Reynolds, which differs in having much narrower leaves and shorter, differently-shaped flowers.

Our Plate was prepared from material sent in by Mr. G. W. Reynolds from the Umkuzi Valley near Alpha, Zululand, and from photographs of flowering plants at that locality.

Description :—*Plant* succulent, acaulescent. *Leaves* about 20 in a dense rosette, dull green with numerous dull white spots above, immaculate beneath, up to 48 cm. long, 13 cm. broad at the base, erectly spreading, lanceolate, slightly caniculate above, convex beneath, with the margins sinuate-dentate and with a very pronounced corneous brown edge and armed with stout brown teeth up to 10 mm. long and 10–15 mm. apart. Inflorescence a branched panicle up to 2 m. high, bearing 15–25 racemes. *Peduncle* about 10-branched from about the middle, with the lowest branches

bearing 1–4 branchlets. *Racemes* 40 cm. long, 7 cm. in diameter, cylindric, acuminate. *Bracts* thin, scarious, brownish, 20 mm. long, 3 mm. broad at the base, narrowly deltoid, 7–9-nerved. *Pedicels* up to 15 mm. long. *Perianth* dull scarlet with a bloom, 35–40 mm. long, with a basal swelling 12–14 mm. in diameter, constricted to 6–7 mm. above the ovary, thence decurved and enlarging towards the throat, with the mouth trigonous; outer segments free for 6 mm.; the inner broader and with more obtuse apices. *Anthers* very shortly exserted. *Ovary* green, 10 mm. long, 4 mm. in diameter; stigma eventually exserted 1–2 mm. *Capsule* 30 mm. long, 16 mm. in diameter. (National Herbarium, Pretoria, No. 22853.)—G. W. R.

PLATE 692.—Fig. 1, plant, considerably reduced; 2, median longitudinal section of flower.

C. Letty del.

Plate 693.

CYRTANTHUS Flanagani.

Natal, Basutoland, Transvaal, Cape Province.

Amaryllidaceae. Tribe Amarylleae.

Cyrtanthus *Ait.; Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 729.

Cyrtanthus Flanagani *Baker* in *Fl. Cap.* vol. vi. p. 532.

We are indebted to Mrs. Simon Bekker, wife of the Administrator for the Transvaal, for the plants which enabled us to figure a little-known species and to clear up some doubtful points.

In the National Herbarium, Pretoria, were four unnamed specimens of a yellow-flowered species of *Cyrtanthus* collected at Cala in the Transkei (National Herb. No. 23021); on the Mount-aux-Sources (*Flanagan* 1824); Bergville, Natal (*Galpin* 10,148); Barkly East (National Herb. No. 23024). Three of the above were noted by the collectors as having yellow flowers. In the recorded descriptions of species of *Cyrtanthus*, only two species, *C. lutescens* and *C. flavus* (see Plate 559), have yellow flowers, but both differ considerably from the unnamed herbarium specimens.

In the "Flora Capensis," where Baker described *C. Flanagani*, the flowers are said to be white, and there was no indication on our specimen collected by Flanagan as to the colour of the flower. Through the courtesy of the Curator of the Bolus Herbarium, we had the opportunity of examining Flanagan's specimen, on which the name *C. Flanagani* appears in Baker's handwriting. Flanagan had written in the name *C. lutescens*, which is the only indication we have that it was very probably a yellow-flowered plant. A careful examination of the author's type and a comparison with our unnamed specimens have now confirmed their identity as *C. Flanagani*. The measurements of the flower as given by Baker in the "Flora Capensis" do not agree with the

type in which we found the corolla-throat to be $\frac{1}{4}$ inch in diameter.

Mrs. Bekker states that the species is plentiful on the mountains round Barkly East, her home town. She now has plants in cultivation in her garden at Pretoria, where they are doing well and flower freely during the month of August. They are very useful as cut flowers, and the delicate fragrance is an added attraction.

DESCRIPTION :—*Bulb* budding at the base, 3 cm. diameter, produced into a neck 11 cm. long. *Leaves* 4, appearing with the flowers, somewhat firm, up to 20 cm. long, 1·9 cm. broad, erect, lorate, somewhat falcate, obtuse. *Peduncle* 20 cm. long, compressed. *Spathe-valves* white with red veins, lanceolate; the largest 5 cm. long, 1·1 cm. broad near the base; the smaller 4·5 cm. long, 1·0 cm. broad. *Bracts* white, 2 cm. long, linear-filiform. *Pedicels* green, up to 2·5 cm. long, terete. *Perianth* strontian yellow (R.C.S. XVI), semi-erect; trumpet-shaped; tube 4·6 cm. long, 1 mm. diameter at the base, 6 mm. diameter at the throat; lobes erect-spreading, 1·5 cm. long; the 3 outer 9 mm. broad, slightly hooded at the apex and with an apiculus; the 3 inner 8 mm. broad, not hooded or apiculate at the apex. *Stamens* not exserted from the corolla; the 3 upper inserted just below the throat, with the free portion of the filament 1·5 mm. long; the 3 lower inserted 1 cm. below the insertion of the upper filaments; anthers 2·5 mm. long. *Ovary* 8 mm. long, cylindric, oblong in outline, faintly 3-lobed; style shortly 3-lobed, with the lobes 1 mm. long. (National Herbarium, Pretoria, No. 23023.)

PLATE 693.—Fig. 1, median longitudinal section of flower; 2, portion of perianth, showing insertion of stamens; 3, style lobes.

C. Letty del.

Plate 694.

ROCHEA odoratissima.

Cape Province.

Crassulaceae.

Rochea *DC.* in *Benth. et Hook. fil. Gen. Plant.* vol. i. p. 658.

Rochea odoratissima *DC. Prodr.* vol. iii. p. 394; *Fl. Cap.* vol. ii. p. 369.

Rochea odoratissima, a common plant on the Cape Peninsula, was one of the many species of so-called " Cape plants " sent to Europe over a century ago. In the year 1803 Jacquin published a coloured plate of the species from plants which flowered in Europe.

The genus *Rochea* is endemic in South Africa, and is represented by four species found in the south-western districts of the Cape Province. One very handsome species with scarlet flowers is popularly known among mountaineers of the Cape Peninsula as the " Red Crassula." It differs from the genus *Crassula* in having a corolla-tube longer than the calyx, and it may be distinguished from the genus *Cotyledon* in having the leaves connate at the base.

The flowers vary somewhat in colour from pale-yellow or creamy-white to flowers flushed with pink.

The plants we figure were collected by Mrs. J. C. Letty in October 1932 at Camp's Bay, near Cape Town.

Description :—A succulent plant up to 30 cm. high, simple or with one or two short branches. *Stem* green or red, erect, scabrous. *Leaves* opposite, connate at the base, up to 2·5 cm. long, linear-lanceolate, channelled above, acute or sub-acute, cartilaginous-ciliate on the margins. *Cymes* many-flowered, sub-capitate. *Calyx-lobes* connate below, 1 cm. long, 2 mm. broad, linear-lanceolate, cartilaginous, ciliate. *Corolla* cream, greenish-cream, and rosy; tube 7 mm. long, 3·5 mm. diameter, glabrous; lobes 2 cm. long, 1·25 mm.

broad below, gradually widening upwards, slightly hooded at the apex and with a small knob at the back below the apex, adhering but not connate, glabrous. *Stamens* about $\frac{3}{4}$ as long as the corolla; anthers 3 mm. long, oblong-linear. *Capels* 5, 1·7 cm. long; ovary linear in outline; style linear, somewhat club-shaped above. (National Herbarium, Pretoria, No. 14392.)

PLATE 694.—Fig. 1, a single flower; 2, a sepal; 3, section of corolla; 4, gynaecium.

F.P.S.A., 1938.

C. Letty del.

PLATE 695.

HAEMANTHUS NELSONII.

Transvaal.

AMARYLLIDACEAE. Tribe AMARYLLEAE.

HAEMANTHUS *Linn.; Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 730.

Haemanthus Nelsonii *Baker* in *Kew Bull.* 1898, p. 310.

The genus *Haemanthus*, of which we have previously figured three species, is represented in South Africa by over 30 species. Several occur in tropical Africa, and one species is recorded from the island of Socotra. *H. Nelsonii* was described by Baker in the year 1898 from a dried specimen and living bulbs said to have come from near Johannesburg. In the Botanical Magazine for 1933 (t. 9293) the species was illustrated in colour from plants that were direct descendants of the bulbs sent to Kew in the year 1897.

The plant figured was grown at the Division of Plant Industry, Pretoria, and flowered in January 1937. The original was collected by Mr. L. C. C. Liebenberg, M.Sc., on the Maquassi hills, east of Wolmaranstad, in March 1935. Mr. Liebenberg notes that in the area plants are somewhat rare.

As will be seen from the Plate, the species is quite a handsome one, and a worthy addition to the bulb garden. In the particular bulb examined there were four structures differing from the ordinary bulb scales and which appeared to be undeveloped leaves; two were 6·5 cm. long and 1·5–2 cm. broad; two were 5·5 cm. long and 0·7–1 cm. broad.

DESCRIPTION:—*Bulb* about 6·5 cm. diameter, biconvex. *Roots* thick, fleshy. *Leaves* 2, erect, light green beneath, darker green above, 15 cm. long, about 8 cm. broad, oblong, obtuse, densely hirsute above, less densely hirsute beneath, ciliate. *Peduncle* arising behind one of the leaves, 35 cm.

long, 1·2 cm. diameter, semi-terete, glabrous at the base, pilose above. *Spathe-valves* 3·5 cm. long, 1 cm. broad, ovate-lanceolate, membranous, with pinkish veins. *Pedicels* 1·5–3·5 cm. long, terete, glabrous. *Perianth-tube* 5·5 mm. long, 2 mm. diameter above, tubular; lobes 1 cm. long, 2 mm. broad, linear, obtuse, of a beautiful crystalline appearance, with a tuft of multicellular hairs on the inner face just below the tip. *Stamens* inserted at the mouth of the corolla-tube; filaments from 0·6–1·6 cm. long, terete, gradually narrowing upwards; anthers 3 mm. long, oblong. *Style* 1 cm. long, shortly 3-lobed at the apex, in older flowers overtopping the stamens. (National Herbarium, Pretoria, No. 22850.)

PLATE 695.—Fig. 1, bulb with leaves (much reduced); 2, median longitudinal section of flower; 3, tip of perianth-lobe.

F.P.S.A., 1938.

C.Letty del.

PLATE 696.

SENECIO BRYONIIFOLIUS.

Cape Province.

COMPOSITAE. Tribe SENECIONIDEAE.

SENECIO *Linn.; Benth. et Hook. fil. Gen. Plant.* vol. ii. p. 446.

Senecio bryoniifolius *Harv.* in *Fl. Cap.* vol. iii. p. 404.

The specimen we figure is from a plant which flowered at the Division of Plant Industry, Pretoria, in April 1937. The original plants were collected by Mr. A. O. D. Mogg, M.A., in the evergreen forest at Mount Sullivan, near Port St. Johns, in January 1933. The collector states that in their native habitat flowering commences in mid-December, and that the optimum flowering period appears to be mid-January. In the evergreen forest of "yellow-wood" and "stinkwood" the species, when in flower, forms a beautiful sight, as the golden clusters of flower-heads form a long curtain pendant from the loftiest trees. When viewed from below at a distance, even several miles away, against the deep green background of the forest, the mass of yellow flower-heads presents an unforgettable sight. Although so common in its habitat, it does not appear to have been extensively collected. The only record in the National Herbarium are specimens gathered by the late H. G. Flanagan near the Kei Mouth. The figure on Plate 174 (*S. tamoides*) should be compared with this Plate.

The species deserves attention as a horticultural plant. It is easily propagated from slips and appears to be disease proof.

DESCRIPTION:—Plants scandent; branches glabrous. *Leaves* 2–6 cm. apart; petioles usually not straight, 1–2 cm. long, glabrous; blades somewhat succulent, 1–5 cm. long, 1·3–5·5 cm. broad, triangular-ovate, sometimes obscurely 5-lobed, sparsely toothed or sometimes almost entire,

glabrous. *Heads* 3–5 together at the end of the branches, 4 cm. in diameter. *Peduncles* 3–5 cm. long, bare or with 1–2 bracts. *Bracts* at base of the involucre 5–6, 8 mm. long, linear. *Involucre* 1 cm. long, 6 mm. diameter, oblong in outline; bracts connate, free above, with the alternate free portions shortly winged and minutely ciliate at the apex. *Receptacle* flat, honeycombed. *Ray florets :—Corolla-tube* 5 mm. long, cylindric, glabrous; limb 1·6 cm. long, 0·6 cm. broad, elliptic-oblong, 8–9-nerved, minutely toothed at the apex. *Pappus* as long as the corolla-tube, barbellate. *Ovary* 2·5 mm. long, oblong in outline, ribbed, glabrous; style 1·5 mm. longer than the corolla-tube; lobes linear. *Disc floret :*—7 mm. long, cylindric below, widening above; lobes 1·5 mm. long, lanceolate, sub-acute. *Pappus* 1·1 cm. long, barbellate. *Ovary* 2·25 mm. long, oblong in outline, ribbed, glabrous. (National Herbarium, Pretoria, No. 22855.)

PLATE 696.—Fig. 1, median longitudinal section of head; 2, ray-floret; 3, disc-floret.

C. Letty del.

Plate 697.

ALOE MELSETTERENSIS.

*Southern Rhodesia.**

Liliaceae. Tribe Aloineae.

Aloe *Linn.*; *Benth. et. Hook. fil. Gen. Plant.* vol. iii. p. 776.

Aloe melsetterensis *Christian*, sp. nov. in sectione "Saponariae." *A. chimanimaniensi* Christian affinis, sed foliis majoribus recurvatioribusque, supra haud lineatis, bracteis pedicellis floribusque longioribus differt.

Herba succulenta, acaulis vel tandem breviter caulescens, sobolifera. *Folia* ca. 25, dense rosulata, usque 84 cm. longa, 14 cm. lata et 1·2 cm. crassa, e basi apicem versus sensim acuminata, patentia, recurvata, supra canaliculata, viridia, maculis lenticularibus albidis sparsis picta, subtus convexa vel rotundata, pallidiora, obscure maculata, lineata, striata, ad margines linea tenui cornea cincta; dentes 4 mm. longi, 12–26 mm. distantes, interstitiis rectis. *Inflorescentia* usque 1·75 m. alta, supra medium ramosa. *Pedunculus* validus, nudus, lateraliter compressus. *Bracteae ramos* subtendentes usque 10 cm. longae. *Rami* arcuato-erecti, bracteis vacuis paucis usque 6 cm. longis praediti. *Racemi* corymbosi, densi, 11 cm. diam. *Bracteae florum* 24 mm. longae, 4 mm. latae, 3–5-nervatae, scariosae; pedicelli 45 mm. longi. *Perianthium* pallide rubrum, 40 mm. longum, circa ovarium 8 mm. diam. supra ovarium constrictum et 4 mm. diam., hinc ampliatum et 8 mm. diam., faucem versus contractum, decurvulum; segmenta exteriora 14 mm. longa, apicem versus lutescentia, leviter patentia, sub-acuta; segmenta interiora pallidiora, 5-nervata, obtusiora. *Filamenta* inclusa. *Ovarium* 8 mm. longum, 3 mm. diam.

Southern Rhodesia:—Melsetter distr.: One mile east of Melsetter village, *Christian* 275 and *in National Herbarium*, No. 23026.

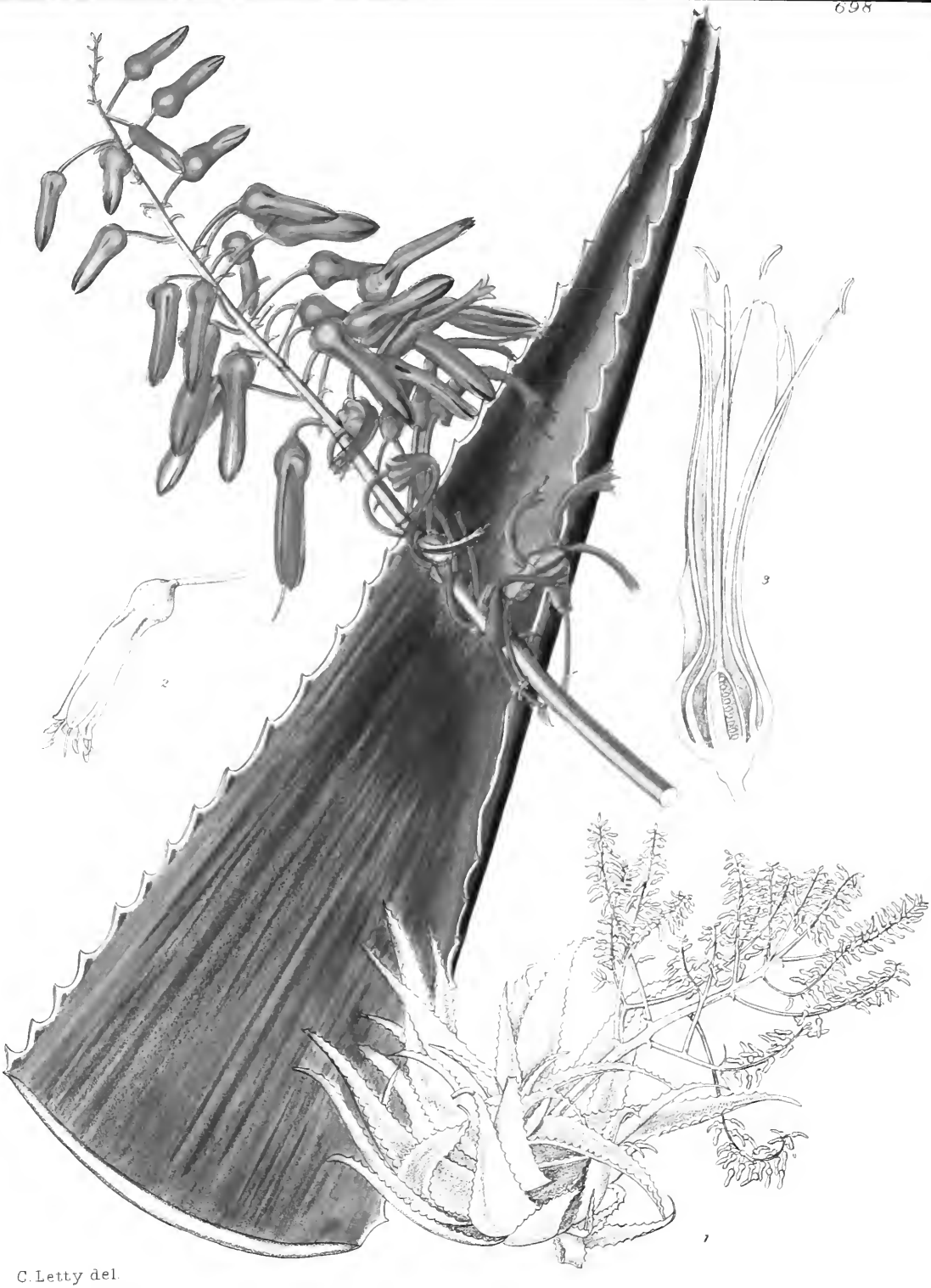
This species was first collected in June 1930 by Major R. H. Everett in a wet vlei, actually in standing water, one mile east of the village of Melsetter. It is found growing both in very wet vleis, where it forms large clumps, and on dry hillsides. It occurs in considerable numbers along the eastern border of Southern Rhodesia, in the mist belt, from near the junction of the Umtali–Melsetter and Umtali–Chipinga roads, and extends north into the Umtali district.

* Not up to the present recorded from South Africa.—J. H.

When in flower it is readily distinguished from *A. chimanimaniensis* (see Plate 639) by its much more robust inflorescence; by the colour of the flowers, especially the bright green buds; by its very long subulate bracts and pedicels and larger flowers: when not in flower by its rather flat rosette, larger, more recurved leaves, and especially by its rather large lenticular spots, and by having the lower surface obscurely spotted. It flowers in June–July, rather later than *A. chimanimaniensis*.

Description :—*Plant* succulent, acaulescent or shortly caulescent with age, suckering from the base. *Leaves* about 25 in a dense rosette, bright green, with rather large scattered paler green lenticular spots on the upper surface, paler green and more obscurely spotted and striate and with a few interrupted dark-green longitudinal lines on the lower surface, 84 cm. long, 14 cm. broad, 1·2 cm. thick in the middle, spreading, recurved, tapering gradually from the base to the apex, broadly concave towards the base and canaliculate above on the upper surface, convex low down and rounded above on the lower surface, bounded on the margins with a whitish horny line and armed with teeth; teeth reddish-brown, pungent, 4 mm. long, 12–26 mm. apart, inclined forwards, with the interspaces straight. *Inflorescence* one or more from the same rosette, up to 1·75 m. high, branched and sub-branched from above the middle with about 6–8 branches. *Peduncle* stout, naked, laterally compressed all the way up, coated with a bloom. *Bracts* subtending the lower branches 10 cm. long, long-attenuate. *Branches pro rata* stout, erect spreading or arcuate-erect, with 6–8 empty scarious subulate bracts up to 60 mm. long; lateral branches often longer than the terminal. *Raceme* densely corymbose, sub-capitate; the terminal up to 11 cm. broad; the lateral smaller; young buds erect, bright light-green, not changing colour until the mature flowers have become pendulous. *Floral-bracts* scarious, up to 24 mm. long, 4 mm. broad at the base, 3–5-nerved. *Pedicels* greenish below, pinkish above, ascending, cernuous, ultimately straight; the lower 40–45 mm. long. *Perianth* light yellowish-red, 40 mm. long, 8 mm. diameter over the ovary, constricted above the ovary to 4 mm. diameter, then widened again to 8 mm. diameter and laterally compressed to 5 mm., slightly contracted towards the throat, slightly decurved; outer segments free for 14 mm., slightly spreading at the apices, sub-acute; inner segments pale-flesh with a 5-nerved red median line shading to yellowish at the apex, dorsifixed to outer segments, sub-obtuse. *Ovary* 8 mm. long, 3 mm. diameter. *Filaments* included; anthers brown. —H. B. C.

Plate 697.—Fig. 1, plant much reduced; 2, a single flower; 3, median longitudinal section of flower.



C. Letty del.

Plate 698.

ALOE Chabaudii var. mlanjeana.

*Nyasaland.**

Liliaceae. Tribe Aloineae.

Aloe *Linn.*; *Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 776.

Aloe Chabaudii *Schönl.* var. **mlanjeana** *Christian,* var. nov., a typo, in eo quod planta minor est, foliis viribus supra rufescentibus, breviori inflorescentia plerumque obliqua, ramis profunde patulantibus differt.

Nyasaland: Mlanje Mountain, *Christian* 274 and *in National Herbarium.*

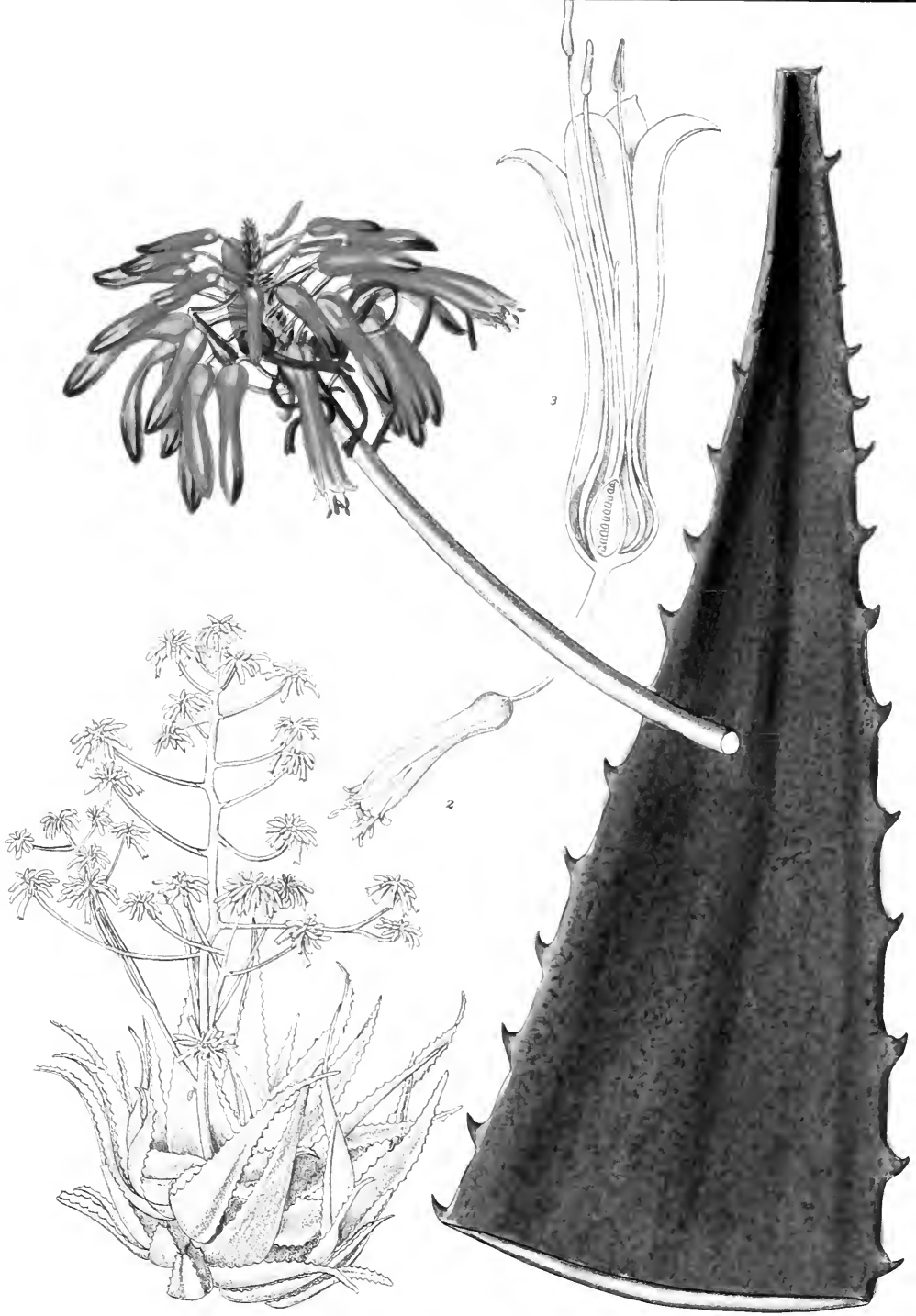
This pretty little Aloe, which belongs to Berger's Section *Aethiopicae*, flowers during the months of July and August. It was first collected by Major R. H. Everett on the slopes of Mlanje Mountain in June 1913. The variety is readily distinguished from the type in being a smaller plant suckering from the base, with bright green leaves which, in the dry season, turn a dull brick-red in the upper part on the upper surface only; the lower surface, except for a reddish tinge towards the margins, does not change colour unless exposed to the sun. It may also be distinguished by the narrow, horny white line on the margins, which curves up into the basal portion of the brown-tipped teeth. The inflorescence differs from that of the type in being shorter and nearly always rising at an oblique angle, with pronounced spreading branches which cause the flowers to turn upwards thereby becoming sub-secund. This new variety is far more consistent in its various characters than the type which, especially in its branching habits, is exceedingly variable.

Description:—*Plant* succulent, stemless, suckering from the base. *Leaves* rosulate, erect-spreading to spreading, slightly recurved towards the apex, 35–40 cm. long, 9 cm. broad low down, ovate-lanceolate, gradually attenuate; upper surface green shading to dull brick-red in the upper

* See footnote to Plate 697.

part, immaculate, obscurely striate, broadly concave low down, channelled above; lower surface green with a reddish tinge towards the margins, immaculate, obscurely striate, convex low down, rounded above; margins bounded by a narrow white horny line and armed with teeth; teeth horny, brown-tipped, flat, 3 mm. long, 10–14 mm. apart, smaller and more crowded towards the base, with straight interspaces between them. *Inflorescence* loosely panicled, 40–50 cm. long, usually rising obliquely, branched from low down with about 8–12 distinctly patulate branches. *Racemes* sub-lax, with the lower 16–18 cm. long, with the flowers becoming sub-secund as they develop. *Bracts* thin, scarious, 5 mm. long, 5-nerved. *Pedicels* spreading, 18–20 mm. long. *Perianth* usually shortly stipitate, 30–32 mm. long, slightly decurved, obconical, 9 mm. diameter over the ovary, with three distinct indentations above it (in line with the inner segments), gradually constricted to 6 mm. diameter and again widened to 9 mm. diameter and contracted toward the throat; outer segments coral-red shading to flesh at the margins, 12 mm. long, hardly spreading, sub-acute, 5-nerved; inner segments white shading to yellow at the apex, dorsifixed to the outer, free at the margins, sub-spreading, sub-obtuse, with a narrow 3-nerved red keel. *Filaments* white below with a yellowish tinge above, unequal, just exserted; anthers pale terracotta, 3 mm. long, exserted. *Ovary* green, 5 mm. long, 3 mm. diameter, acuminate; style white, at length exserted. (National Herbarium, Pretoria.)—H. B. C.

PLATE 698.—Fig. 1, plant much reduced; 2, a single flower; 3, median longitudinal section of flower.



C. Letty del

Plate 699.

ALOE Chabaudii var. Verekeri.

*Southern Rhodesia.**

Liliaceae. Tribe Aloineae.

Aloe *Linn.; Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 776.

Aloe Chabaudii *Schönl.* var. **Verekeri** *Christian* var. nov., a typo foliis olivaceo-viridibus apicem versus rubescentibus, recurvulis, dentibus marginalibus uncinatis, racemis qua sub-capitatis facile distinguitur.

Southern Rhodesia:—Upper end of Salbi River Gorge, *Christian* 395 and *in National Herbarium.*

This Aloe, which belongs to Berger's Section *Aethiopicae*, was first collected by Mr. L. S. A. Vereker in July 1931, and is named in honour of the collector, who has, for many years, been a keen collector of the native succulents of Southern Rhodesia. It was found covering one of three small hills at the mouth of the Salbi gorge; one of the other hills was covered with *A. Pienaarii* Pole Evans, and *A. aculeata* Pole Evans covered the third hill. None of the three species mixed, and no other species of *Aloe* have been found within many miles.

In the colour of its flowers our new variety varies from shades of yellow to shades of red, no one colour predominating. The racemes, though usually sub-capitate, are sometimes shortly conical and very occasionally cylindric-acuminate. The colour of the leaves and hooked marginal teeth appear to be constant characters.

Description:—*Plant* succulent, acaulescent. *Leaves* rosulate, olive green, becoming reddish in the upper half in the dry season, 58 cm. long, 10 cm. broad, ascending, slightly recurved towards the apex, ovate-lanceolate, attenuate, on the upper surface obscurely striate and flat low down but concave above and channelled towards the apex, convex on the under surface, with toothed narrow whitish cartilaginous

* See footnote to Plate 697.

margins; teeth pale-brown at the tip, horny, 4 mm. long, uncinate, 18 mm. apart but closer low down and more distant above, with the interspaces straight. *Inflorescence* a branched panicle 75–90 cm. high, branched and sub-branched from low down; lower branches erect-spreading; upper branches arcuate-spreading. *Peduncle* furrowed and covered with a bloom. *Raceme* condensed at the ends of the branches into a sub-capitate head 8 cm. diameter, with 3–4 laxly disposed flowers below it; buds spreading; mature flowers sub-pendulous. *Bracts* scarious, 5 mm. long, 3 mm. broad, deltoid, acute, 5-nerved. *Pedicels* arcuate-erect; the lower 15–17 mm. long. *Perianth* various shades of yellow and red, shortly stipitate, 32 mm. long, decurved, 5·5 mm. diameter over the ovary, gradually slightly constricted to 4·5 mm. diameter towards the middle, with 3 pronounced oblong indentations above the ovary (in line with the inner segments), thence widened to 8 mm. diameter and laterally compressed to 6 mm., slightly contracted towards the throat; outer segments paler on the margins, hardly spreading, as long as the tube, sub-acute, 5-nerved; inner segments whitish with a narrow darker 3-nerved median line, slightly spreading, dorsifixed to the outer segments, sub-obtuse. *Filaments* pale yellow, unequal, included; anthers pale terracotta, 3 mm. long, just exserted. *Ovary* pale olive-green, 4 mm. long, 2 mm. diameter, tapering into the pale yellow included style.—H. B. C.

PLATE 699.—Fig. 1, plant much reduced; 2, a single flower; 3, median longitudinal section of flower.

F.P.S.A., 1938.

C. Letty del.

Plate 700.

UTRICULARIA LIVIDA.

Griqualand East, Pondoland, Natal, Transvaal.

LENTIBULARIACEAE.

UTRICULARIA *Linn.; Benth. et Hook. fil. Gen. Plant.* vol. ii. p. 987.

Utricularia livida *E. Mey. Comm.* 281; *Fl. Cap.* vol. 4, sect. 2, p. 425.

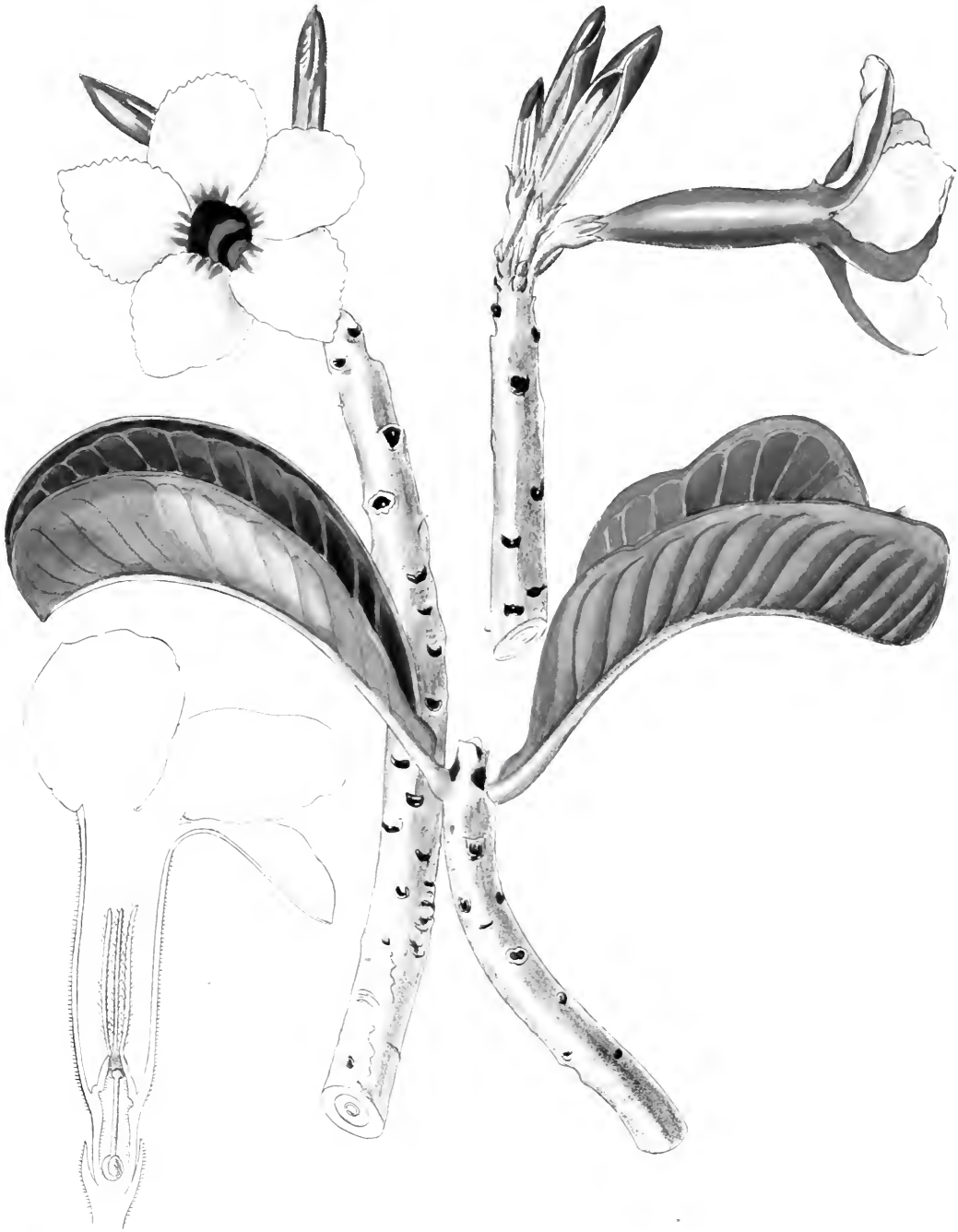
On Plate 515 we figured a species of *Utricularia* belonging to the aquatic group of the genus. The accompanying Plate is that of a species belonging to the terrestrial group. The specimens were collected by Dr. R. A. Dyer on a farm about 10 miles south-west of Underberg in Natal, in December 1935. Dr. Dyer states that plants were common in marshy ground or vleis in the area. Plants were growing in soil of a stiff, clay-like texture, and the delicate nature of the plants made it difficult to transport fresh material to Pretoria for figuring. The petioles are extremely delicate, and the leaves very readily become detached when separating the plants from the mud.

DESCRIPTION:—*Plants* very slender, 11–20 cm. high, unbranched, glabrous, with 2–3 minute scales on the stems. *Leaves* at the base of the stems, 1–1·5 cm. long, 2 mm. broad above, obovate, narrowing into the slender petiole, glabrous, bearing 1–2 shortly stalked bladders. *Flowers* purplish, shortly petioled, 3–5 on each stem. *Bracts* 2, up to 1·5 mm. long, linear. *Sepals* 2, 3·5 mm. long, 3 mm. broad, 5–7-nerved, deeply concave, elliptic-ovate, glabrous. *Corolla* 2-lipped; upper lip 5 mm. long, 3 mm. broad below, 1·75 mm. broad above, somewhat oblong, ciliate, with glandular hairs on the lower $\frac{2}{3}$; lower lip 10 mm. long, 10 mm. broad above, more or less obovate, with a palate of 2 raised ridges each bearing a number of parallel folded plates; spur 8 mm. long, 2 mm. diameter above, gradually narrowed below.

Filaments 1·5 mm. long, linear, curved; anthers 1 mm. long. *Gynaecium* 2·5 mm. long; ovary 1 mm. diameter; style short and thick, merging into a flattened stigma 1 mm. broad. (National Herbarium, Pretoria, No. 20255.)

PLATE 700.—Fig. 1, a single flower in side view; 2, upper lip showing the 2 stamens; 3, gynaecium and one of sepals; 4, gynaecium; 5, leaf showing bladders.

F.P.S.A., 1938.



Letty del.

Plate 701.

ADENIUM Boehmianum.

South-West Africa.

Apocynaceae. Tribe Echitideae.

Adenium *R. & S.*; *Benth. et Hook. fil. Gen. Plant.* vol. ii. p. 722.

Adenium Boehmianum *Schinz* in *Verh. des Bot. Ver. Brand.* vol. 30, p. 259.

This handsome species of *Adenium* we received from Mr. R. N. Fuller, the magistrate at Outjo, in South-West Africa, who had it growing in his garden. Mr. Fuller was good enough to send the plant to the Division of Plant Industry, Pretoria, where it flowered in April 1937. Sergeant Krogh, the local Station Commander at Outjo in charge of the Police, sent us through Mr. Fuller, an interesting note on the plant. He writes: "This plant is found in various parts of the Outjo district and areas to the north. It is practically the only plant used by the Heikom Bushmen for poisoning their arrows for the purpose of killing game. The process of extracting the poison is as follows:—During winter, after the plant has flowered, the bulb is dug up and from this the sap is extracted by pressure. This sap is then boiled in order to condense it. The Bushmen sometimes add a little water during the process of boiling. If the poison has been prepared by a Bushman, it has a black colour, but this is due to charcoal and ash which happen to get mixed with the poison; actually the sap when boiled down to the required thickness is a light-brown, thick syrup. This syrup is allowed to cool and then applied to the point of the arrow, just behind the barb."

The species is related to *A. multiflorum* (see Plate 16), but differs in the shape, size, and markings of the flowers.

Description:—*Branches* 1·5 cm. in diameter, greyish, covered with dark marking from the old leaf-bases. *Leaves* paler beneath, arising from the apex of the branches, 10–12

cm. long, 5·5 cm. broad, falcate, obovate, folded upwards from the mid-rib which is very prominent beneath, with the veins parallel and looping up with one another just below the margins, finely pubescent above and beneath. *Flowers* in groups of 3–4 at the apex of the branches. *Buds* up to 4 cm. long, cylindric. *Bracts* at the base of the pedicel 4 mm. long, ovate, shortly pilose. *Pedicel* 1–1·2 cm. long, 2 mm. diameter, pubescent. *Calyx-lobes* 7 mm. long, ovate, sub-obtuse, pubescent. *Corolla-tube* 3·5 cm. long, 1 cm. diam., cylindric, pubescent without, hairy within below the stamens; lobes 2·8 cm. long, 2 cm. broad, obovate, rounded above, glabrous. *Stamens* 5 mm. long, with an apical linear hairy appendage 1·5 cm. long. *Style* 8 mm. long, cylindric; stigma swollen, with a short apical projection. (National Herbarium, Pretoria, No. 22,848.)

PLATE 701.—Fig. 1, median longitudinal section of flower.
F.P.S.A., 1938.

C. Letty del

PLATE 702.

BROWNLEEA COERULEA.

Cape Province, Natal, Zululand, Transvaal.

ORCHIDACEAE. Tribe OPHRYDEAE.

BROWNLEEA *Harv. ex Lindl.*; *Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 631.

Brownleea coerulea *Harv. ex Lindl.* in *Hook. Lond. Journ. Bot.* vol. 1, p. 16 (1842).

Through the courtesy of Mr. A. E. Grewcock, forester at Woodbush, Transvaal, we are enabled to figure for the first time a species of *Brownleea*—a characteristic South African genus of the family. Thirteen species of the genus are known, of which ten are found in South Africa, and one in Madagascar. The genus *Brownleea* was first described in the year 1842 by Harvey in a paper "Notes upon Cape Orchidaceae," by Professor Lindley. It was named by Harvey after the Rev. J. Brownlee, a missionary stationed at King William's Town. The type species is the one we figure. Species of the genus occur from the George district, through the eastern districts, Natal, Zululand to the mountains of the eastern Transvaal. *B. coerulea* has a wide distribution and has been recorded from the Bathurst, Albany, Stockenstroom, King William's Town districts, from Tembuland, Natal and Zululand, and from the Barberton and Henaertsburg in the Transvaal. The genus is related to the genus *Disa*, from which it differs in having the petals more or less adnate to the dorsal sepal.

DESCRIPTION:—*Tubers* not seen. *Plant* 20 cm. high, glabrous. *Leaves* 3, more or less horizontal, 6–8 cm. long, 1·7–3 cm. broad, lanceolate, acute, clasping at the base. *Inflorescence* 4-flowered, about 4 cm. long. *Bracts* 1·5–2·5 cm. long, 3–6 mm. broad, lanceolate, acute. *Dorsal sepal* acute and recurved at the tip, with a cylindric spur about 2 cm. long; spur somewhat globose at the tip. *Lateral sepals*

1·6 cm. long, 6 mm. broad, sub-elliptic, narrowed at the base and apex. *Lateral petals* 1 cm. long, somewhat crenate on the upper outer margin and adnate to the dorsal sepal. *Lip* a small linear structure about 1 mm. long, lying between the two lobes of the stigma and not at first easily seen. *Anther sacs* more or less horizontal; pollinia free, with a long caudicle reaching the tip of the rostellum. *Rostellum* 3-lobed at the apex, with the centre lobe as an obtuse conical tooth, with a tuberculate mass on either side near the base. *Stigma* a bilobed cushion. (National Herbarium, Pretoria, No. 20,151.)

PLATE 702.—Fig. 1, flower with petals removed, showing a lateral sepal, anther sacs and long caudicle of pollinia, and rostellum.

E.Niemeyer del.

Plate 703.

ANSELLIA GIGANTEA var. NILOTICA.

Transvaal, Zululand, Tropical Africa.

Orchidaceae. Tribe Vandeae.

Ansellia *Lindl.*; *Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 537.

Ansellia gigantea *Rchb. f.* var. **nilotica** *Summerhayes in Kew Bull.* 1937, p. 462.

In the *Kew Bulletin* for the year 1937, pages 461–463, Mr. V. S. Summerhayes gives a note on the genus *Ansellia*, in which he reduces the six described species to two species, each with a variety. *Ansellia gigantea* var. *nilotica*, which we figure here, was first described as a variety of *A. africana* Lindl. by Baker in the year 1875, and a few years later (1886) raised to specific rank by the late Dr. N. E. Brown. As recognised by Summerhayes, the variety has a wide range, extending from Northern Nigeria, Uganda, Kenya, through the eastern parts of tropical Africa to the eastern Transvaal and Zululand.

On Plate 122 we illustrated the species *A. gigantea*, from which the variety differs in having usually larger flowers with heavier spotting on the sepals. The specimen we figure here was collected by the late Mr. Eugene Marais at Rooiberg, in the Waterberg district of the Transvaal. It has been identified by Mr. Summerhayes as his variety *nilotica*.

Description :—An epiphytic herb. *Leaves* 10–20 cm. long, 1–1·5 cm. broad, lanceolate or linear-lanceolate, shortly mucronate, prominently 3-nerved, with many secondary nerves, glabrous. *Flowers* in a lax 7-flowered raceme. *Peduncle* about 20 cm. long, terete, bearing a few scattered scarious ovate obtuse bracts about 5 mm. long. *Pedicels* (ovary) up to 4 cm. long. *Sepals* 2·5–3 cm. long, 9 mm. broad, oblong-linear, obtuse, 6-veined. *Side petals* 2·8 cm. long, 1 cm. broad, lanceolate-oblong, obtuse, about 8-veined. *Lip* 2·2 cm. long, 3-lobed; side lobes 1·5 cm. long, ·8 cm.

broad, somewhat elliptic, 6-veined; middle lobe 1·1 cm. long, 4·5 mm. broad, spathulate-oblong, with 3 prominent parallel ridges, with the two outer ridges broadening into short wings below. *Rostellum* 1·3 cm. long, 3 mm. broad, linear-oblong, somewhat curved, deeply channelled in the upper portions, with a hood at the apex covering a distinct cavity. *Pollinia* 2 mm. long, 1·25 mm. broad, elliptic. (National Herbarium, Pretoria, No. 14,401.)

PLATE 703.—Fig. 1, the 3-lobed lip; 2, rostellum in side view; 3, rostellum in front view.

C. Letty del

Plate 704.

STAPELIA REVOLUTA.

Cape Province.

ASCLEPIADACEAE. Tribe STAPELIEAE.

STAPELIA *Linn.*; *Benth. et Hook. fil. Gen. Plant.* vol. ii. p. 784.

Stapelia revoluta *Masson, Stap.* 12 t. 10; *Fl. Cap.* vol. 4, sect. 1, p. 980.

The specimen figured was sent to us by Dr. J. Luckhoff of Cape Town, but without any recorded locality. *S. revoluta* appears to be confined to the Clanwilliam district of the Cape Province, and though the "Flora Capensis" cites only two collectors, the species was well known in old botanical literature. That may be because Masson's coloured plate gave it some prominence. Masson figured it in his *Stapelieae Novae* in the year 1796. Eight years later a coloured illustration appeared in Curtis's *Botanical Magazine*, the illustration being made from a plant which flowered in the collection of Mr. Woodford at Vauxhall in July 1801. A good photograph of the species appears in White and Sloane's *Stapelieae* (vol. 2, p. 654).

The species is somewhat anomalous in the genus, as the inner and outer corona-lobes are adnate—a character of the genus *Caralluma*.

DESCRIPTION :—*Stems* up to 30 cm. high, 1·5 cm. diameter, 4-angled, with the faces almost flat or not deeply concave; teeth about 1 mm. long. *Flowers* solitary. *Pedicel* 8 mm. long, terete. *Calyx-lobes* 6 mm. long, linear-lanceolate, acute. *Corolla* 5·5 cm. diameter, with the disc raised so as to form a deep depression in which the corona is situated; disc covered with minute erect hairs; lobes 1·5 cm. long, 1·6 cm. broad at the base, ovate, acute, hirsute with short hairs, with vibritile clavate cilia on the margins. *Outer corona-lobes* 3 mm. long, 1·75 mm. broad, oblong, shortly 2-lobed at the apex; *inner corona-lobes* 7 mm. long, at first bent over the

anthers and then recurving outwards, semi-terete, flattened at the apex and with small protuberances on the flattened portion, with a linear almost horizontal horn 3 mm. long from the base. (National Herbarium, Pretoria, No. 20,154.)

PLATE 704.—Fig. 1, corona, much enlarged.
F.P.S.A., 1938.

C. Letty del.

PLATE 705.

STAPELIA UNICORNIS.

Swaziland.

ASCLEPIADACEAE. Tribe STAPELIEAE.

STAPELIA *Linn.*; *Benth. et Hook. fil. Gen. Plant.* vol. ii. p. 784.

Stapelia unicornis *Luckhoff in* "*S.A.G.*" vol. xxviii, no. 4 (1938).

With the publication in 1937 of the three magnificent volumes on the *Stapelieae* by Alain White and Boyd Sloane, one may have been led to think that the last word had been written on this group of plants. Yet, as was inevitable, the ink was not dry, so to speak, before undescribed species were being brought to light. One of the most remarkable of these is *Stultitia paradoxa* Verdoorn, described under Plate 677 (1937). Carl Luckhoff described four in "*S.A.G.*" vol. 28, No. 4 (1938). *Stapelia unicornis* is one of these. At least two more apparently undescribed species of *Stapelieae* are known from the northern Transvaal. It is certain that tropical parts of Africa, which have not generally been looked upon as succulent plant country, will yield more novelties in this interesting group, when botanical exploration is carried out in greater detail than has been possible up to the present time.

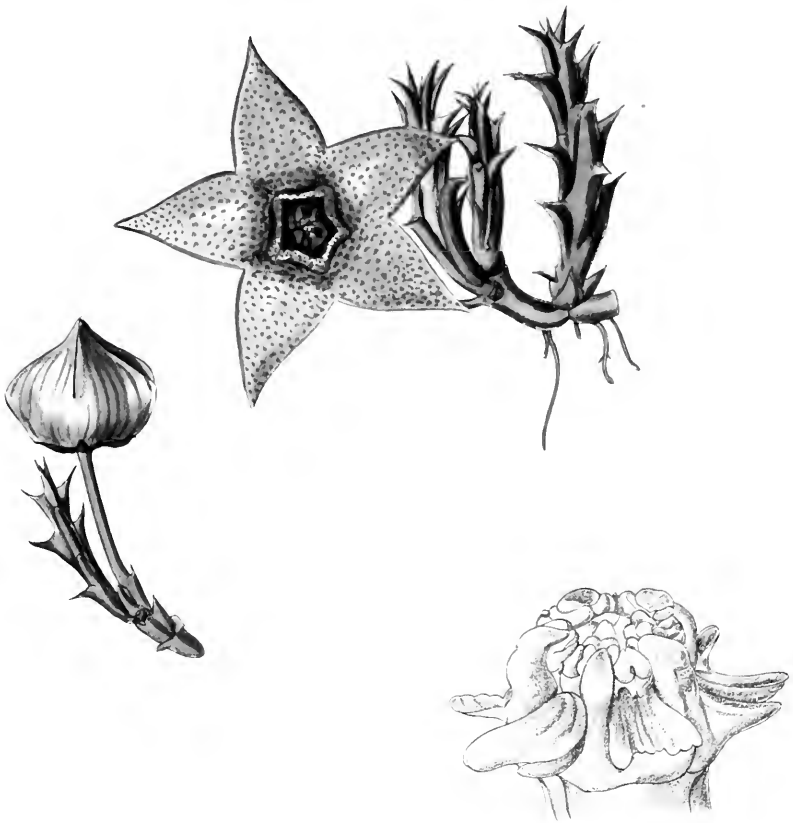
Stapelia unicornis has the appearance of a miniature *S. nobilis* N. E. Br. (to be seen on Plate 465), to which species it is most nearly related. Not only does it differ from this in size, but also in the structure of the inner corona-lobes, the dorsal wing of which in *S. unicornis* is united for its whole length to the inner horn, whereas in *S. nobilis* it is free beyond the middle.

The plant figured here was collected by Mr. D. R. Keith in 1935 in Swaziland, about 10 miles from Stegi, on the slopes of the Ubombo Hills. Although the material was too poor for figuring at the time, a description was drawn up. The plant did remarkably well at the Division of Plant Industry both in

1937 and early 1938, when our illustration was made. In the meantime, however, Carl Luckhoff had received a flowering specimen in May 1937 originally collected in Swaziland by Miss S. Postma. This is the specimen he described in "*S.A.G.*" The flowers produced on Mr. Keith's plant are smaller than those described by Luckhoff, but do not differ in any character of even varietal importance. Regarding the success attending the cultivation of this species in Pretoria, it is interesting to note that succulents indigenous in the Transvaal are usually far more amenable to cultivation here than those from the other provinces.

DESCRIPTION :—*Stems* branched from the base, tufted, 13–15 cm. high; branches sub-horizontal at the base with the major portion sub-erect, about 1·5 cm. thick, 4-angled, somewhat concave on the sides, softly pubescent, green; leaves rudimentary. *Flowers* 1–3 from towards the base of the branches, successively developed. *Pedicels* 6–12 mm. long, pubescent. *Calyx-lobes* 5–6 mm. long, lanceolate. *Corolla* in bud ovate, acuminate, when open 9 cm. across, shortly pubescent on the outside, basal part saucer shaped, covered within with long curved purple hairs which extend $\frac{2}{3}$ up the lobes and only a few scattered hairs on the upper $\frac{1}{3}$, obscurely rugose on the surface, greenish yellow with very light purple transverse markings except on the tips of the lobes; lobes about 3·5 cm. long, 2 cm. broad at the base, ovate-lanceolate, recurving with age, ciliate on the margin with long hairs, thinly so towards the tips. *Outer corona-lobes* ascending-spreading, recurved towards the tip, 5–6 mm. long, oblong-linear, acuminate, purple-brown; *inner corona-lobes* erect, almost completely wing-like with a short erect horn-like projection from the inner margin. (National Herbarium, Pretoria, No. 23,309.) R. A. DYER.

PLATE 705.—Fig. 1, staminal column with outer and inner coronas. F.P.S.A., 1938.



C. Letty del.

Plate 706.

STAPELIA VERRUCOSA.

Cape Province, Natal? Transvaal.

Asclepiadaceae. Tribe Stapelieae.

Stapelia *Linn.*; *Benth. et Hook. fil. Gen. Plant.* vol. ii. p. 784.

Stapelia verrucosa *Masson, Stap. Nov.* 11, t. 8; *Fl. Cap.* vol. iv. sect. 1, p. 987.

Stapelia verrucosa Masson var. *pulchra* N. E. Br. was figured in this work in 1932 on Plate 480, and it may be asked why a very similar form should be reproduced now. In the text referring to Plate 480 the statement was made that no exact match of Masson's type specimen, collected in the Cape Province over 150 years ago, had been recorded since. The particular feature mentioned as characterising the type as distinct from the several varieties commonly found, is five well-marked channels radiating to the angles of the annulus. It was the presence of radiating channels between the outer corona-lobes in the specimen figured here, which first attracted attention. The depressions on our specimen may not be absolutely identical with those on Masson's type, but they are certainly very similar. Masson figured the type in his classic work *Stapelieae Novae* 1796, t. 8. It is obvious that the figure is somewhat unnatural, since the branches are abnormally regular in shape, hence too much importance must not be attached to differences between it and the one here.

Our specimen was brought to the National Herbarium, Pretoria, by Mr. M. Segel, who in turn had obtained the plant from Mr. F. Anderson of Johannesburg. On the authority of the latter it is stated to have been collected at the foot of a granite koppie near Woodbush in the Pietersburg district, Transvaal. There seems no reason to doubt the authenticity of this record, but it must be pointed out that the locality is considerably farther north than any previously recorded habitat for the species. Further, this part of the country was *terra incognita* to the white man when Masson collected in the

Cape Province, several hundred miles distant. The similarity between the unusual form collected by Masson and the plant stated to have originated in the Transvaal is remarkable, and in view of this it is of importance to have the latter record verified.

Damaged flowers, apparently belonging to a form of this species, were received from northern Natal, but complete material was not available. If the presence of the species in northern Natal should be established, it would be a natural connecting link with the present record from the Transvaal.

The forms of *Stapelia verrucosa* are classified under six varieties by N. E. Brown in Fl. Cap. 4, 1 : 1909. Taken as a whole, they are widely distributed in the eastern Cape Province and extend into Griqualand West. The commonest variety is *pulchra*, but, as has been noted by other workers, intermediate forms between the varieties exist to complicate precise identification.

DESCRIPTION :—Densely tufted succulent 5–7 cm. high; branches 6–9 mm. thick (excluding the tubercular leaf bases), obscurely 4-angled, with acute rudimentary leaves on prominent leaf bases. *Flowers* usually single from towards the base of young branches. *Pedicels* 3–4 cm. long, 2 mm. thick. *Sepals* lanceolate, acuminate, 8 mm. long. *Corolla* with a united somewhat cup-shaped basal portion 1 cm. from the base (± 7 mm. deep) furnished with a narrow pentagonal annulus 1·5 mm. high (as measured from the outer margin) surrounding the staminal column, with 5 radiating channels between the outer corona-lobes extending to the angles of the annulus and a few erect hairs round the base of the staminal column, yellowish-green, spotted with purple red, more densely so on the annulus, and less so towards the tips of the lobes; lobes 1·8–1·9 cm. long, 1·3–1·4 cm. across the base. *Outer corona-lobes* radiating from the staminal column 1 mm. above its base, 1·5 mm. long, bifid, with or without a small tooth in the concave portion, dark purple-red; *inner corona-lobes* incumbent on the backs of the anthers but not equalling them and furnished with a small thickened hump on the dorsal side, yellow stained with red. (National Herbarium, Pretoria, No. 23,310.) R. A. DYER.

PLATE 706.—Fig. 1, staminal column with inner and outer coronas.
F.P.S.A., 1938.

C. Letty del.

Plate 707.

ALOE LUTESCENS.

Transvaal.

Liliaceae. Tribe Aloineae.

Aloe *Linn.*; *Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 776.

Aloe lutescens *Groenewald* sp. nov. *A. Pienaarii* Pole Evans simillima, sed racemis longioribus et conicis, inflorescentia plerumque tri-ramosa, et floribus minoribus differt.

Caulis brevis. *Folia* flavo-viridia, c. 30, dense rosulata, erecta, 40 cm. longa, basin versus 8 cm. lata, lanceolato-ensiformia, leviter apice recurvata, ad margines aculeis deltoideis brunneis vel luteis 1·5 mm. longis et 4 mm. inter se distantibus armata. *Inflorescentia* 1 m. alta, erecta, infra medium 3-ramosa, ramis arcuato-acuminata in eodem plano verticale, basi bractea deltoideo-acuminata munitis. *Racemi* 40 cm. longi, cylindrico-elongati. *Flores* deinde lutescentes; alabastra rubra, apice viridia. *Bracteae* initio dense imbricatae, c. 15 mm. longae et latae, late ovato-acuminatae, plurinervae. *Pedicelli* c. 10 mm. longi. *Perigonium* 30 mm. longum, cylindraceum vel trigonum; segmenta libera, exteriora acuta, interiora obtusa. *Genitalia* vix exserta.

Transvaal: Zoutpansberg distr.; Chipese, June 1937, *van der Merwe in National Herbarium, Pretoria,* No. 23,301.

This aloe resembles *Aloe Pienaarii* Pole Evans (see Plate 17) in general appearance and in its habit of forming new plants by division. It differs, however, in its much longer racemes, which are cylindric, but not conical, and are consistently coloured a bright vermilion when in bud, while the open flowers are a pale yellow with occasionally a little red left round the base. Its habit of branching, as in *A. Wickensii* (see Plate 41), nearly always consists of a main axis dividing into three in one vertical plane, whereas the branching of *A. Pienaarii* is irregular and the branches usually more than three in number. The flowers are smaller than those of *A. Pienaarii*, though similar in shape. Its claim to specific rank rests on the above differences.

Aloe lutescens occurs along a wide belt south of the Limpopo, from the northern Waterberg and Piet Potgietersrust districts to many localities in the Zoutpansberg, such as

Mara, Waterpoort, and Chipese. The large clumps of plants with their yellowish-green leaves, often burnt by the sun to a straw colour, are quite characteristic and easily distinguishable from the more variable *A. Pienaarii* and the non-suckering dolomite-loving *A. Wickensii*.

The specimen figured was collected by Dr. F. Z. van der Merwe at Chipese in the Zoutpansberg district in June 1937. In that locality it makes a brave show when in flower from the end of June to the end of August.

Description :—*Plant* with a short stem 5–50 cm. long, often covered by dried leaves; original base often decays in an old plant and lies on its side on the ground supported by adventitious roots; leaf-bearing portion of stem always erect; plants multiply freely by division, forming colonies. *Leaves* a matt yellowish-green, sometimes reddish or straw-coloured where dried, about 30 in a dense rosette, erect and slightly recurved toward the apex, 40–50 cm. long, 8 cm. broad at the base, lanceolate-ensiform, slightly concave above the base, but convex for the rest of its length on the upper surface, convex beneath, with the margins bearing small yellowish or brown deltoid spines about 4 mm. apart and 1·5 mm. long. *Inflorescence* 1–4, often 3, from each plant, about 1 m. high, erect, divided below the middle into 3 arcuate-erect branches. *Bracts* deltoid-acuminate. *Racemes* up to 40 cm. long, cylindric. *Bracts* at first imbricate, at first concealing the small buds, 15 mm. long, about 15 mm. wide, broadly ovate-acuminate, many-veined. *Buds* scarlet vermilion with greenish tips when they first emerge from the bracts. *Pedicel* about 1 cm. long. *Perianth* pale yellow, sometimes with scarlet patches around the base, about 3 cm. long, cylindric or slightly triangular in cross-section; segments free, equally long; outer 3 acute; inner 3 obtuse and slightly recurved at the apex. *Genitalia* just exserted. *Fruit* about 2 cm. long, cylindric. (National Herbarium, Pretoria, No. 23,301.)

Plate 707.—Fig. 1, plant, much reduced; 2, a bract; 3, median longitudinal section of flower.

C. Letty del

Plate 708.

ALOE angustifolia.

Transvaal.

Liliaceae. Tribe Aloineae.

Aloe *Linn.*; *Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 776.

Aloe angustifolia *Groenewald* sp. nov. in Sectione *Saponariae, A. transvaalensi* Kuntze paullum affinis, sed foliis angustioribus et longissimis et inflorescentiae habitu differt.

Planta subcaulescens. *Folia* c. 15–20, patentia, c. 60 cm. longa et 3·5 cm. lata, linearia, ex medio sensim acuminata, supra planiuscula obscure viridia, saepe purpurascentia, maculis magnis albidis oblongis transverse fasciatis picta, subtus convexa pallide viridia, vix maculis picta, ad margines fere rectos dentibus corneis deltoideis apice brunneis c. 5 mm. longis et circiter 14 mm. inter se armata, succum purpurascentem in contusionibus exsudanta. *Inflorescentia* circiter 1 m. alta; scapus supra medium 10–12-ramosus, ramis arcuato-erectis terminali paullum brevioribus, ad basin bracteis acuminatis 6 cm. longis et 2 cm. latis, dentibus armatis, suffultis. *Racemi* laxi, 7–20 cm. longi; bracteae scariosae, circiter 1 cm. longae, acuminatae; pedicelli circiter 1 cm. longi. *Perigonium* 30 cm. longum, basi valde globoso-inflatum, 7–8 mm. latum, deinde constrictum ad c. 4 mm. paene curvatum, denique ad 7 mm. ampliatum et faucem versus ad 9 mm., pallide rubrum; segmenta per $\frac{2}{3}$ connata, lineis rubris faucem versus brunneis-viridibus picta. *Filamenta* brevissime exserta.

Transvaal:—Leysdorp distr., near Gravelotte, April 1936, *F. Z. van der Merwe in National Herbarium, Pretoria,* No. 21,288.

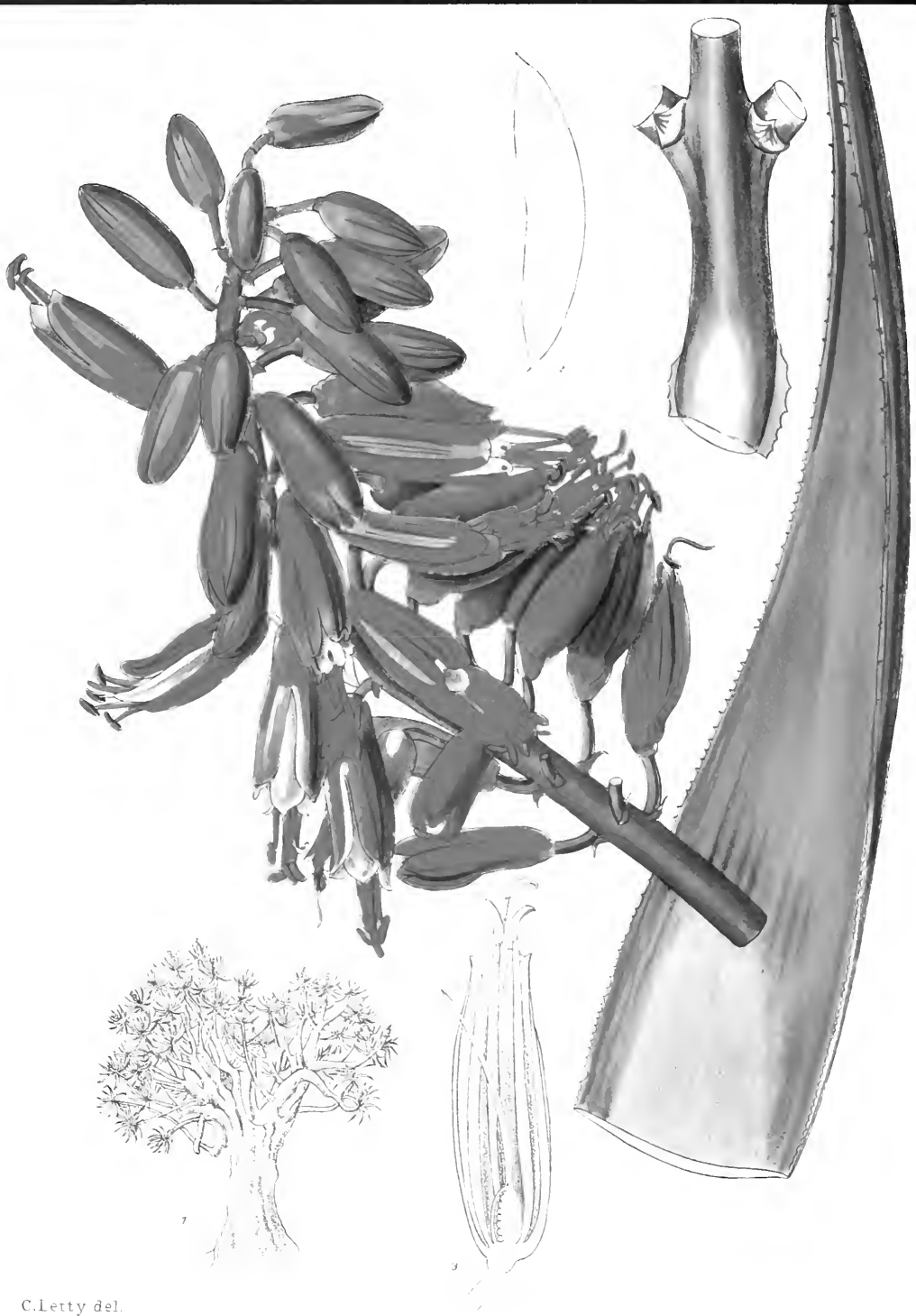
Aloe angustifolia occurs in clayey soil among grass in openings among acacia and other trees of the low veld near Leydsdorp. It forms large suckering groups, and flowers in February and March. The species belongs to the maculate group (*Saponariae*) and is related to *A. transvaalensis* Kuntze in its suckering habit, its time of flowering, and the lax racemes, but differs in the unusual length and narrowness of the leaves, even when growing in a dry and exposed habitat. The side axes of the inflorescence are more erect than those of *A. transvaalensis* which gives the impression of a more congested inflorescence; the flowers are also wider and less curved. The leaves spread outward toward the ground and, on account

of their length and pliability, are often twisted about, giving them a snake-like appearance which is added to by the peculiar markings. The sap in the leaf turns a deep purple on exposure to the air.

Our plate was prepared from specimens collected by Dr. F. Z. van der Merwe in April 1936.

DESCRIPTION :—*Stem* short with a rosette of 15–20 leaves. *Leaves* up to 60 cm. long or more, about 3·5 cm. broad at the base, about 5 mm. thick at the base, linear, tapering above, with the apex not usually dry, dark green and often shading into purplish-brown on the upper surface, with distinct whitish oval spots about 12 × 3 mm. often arranged in transverse bands, paler green with corresponding but less distinct markings on the under surface, armed on the margins with small spines about 3 mm. long and about 14 mm. apart, usually at right angles to the margin. *Inflorescence* about 1 m. high. *Peduncle* about 2·5 cm. diameter, terete, branched slightly above the middle, with the 10–12 branches arising at an angle of 40° to the main peduncle and somewhat curved; secondary branches few. *Bract* about 6 mm. long, 2 cm. broad at the base, acuminate, with numerous brownish veins, with small spines along the margins and at apex. *Raceme* lax, somewhat cylindric, 7–20 cm. long. *Bracts* membranous, 1 cm. or less long. *Pedicel* about 1 cm. long. *Perianth* pale pinkish-red, with marked red lines along the middle of the segments, turning brownish-green at the tips, 30 mm. long, globose and 7–8 mm. diameter at the base, then constricted to 4 mm. diameter and gradually widening to 7–9 mm. at the mouth; segments free for 1 cm. *Anthers* bright orange, slightly exserted. *Fruit* 3 cm. long, 1 cm. diameter, cylindric, not distinctly lobed.

PLATE 708.—Fig. 1, plant much reduced; 2, median longitudinal section of flower.



C.Letty del.

PLATE 709.

ALOE DICHOTOMA.

Cape Province, Namaqualand, S.-W. Africa.

LILIACEAE. Tribe ALOINEAE.

ALOE *Linn.*; *Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 776.

Aloe dichotoma *Linn. fil. Suppl.* 206; *Fl. Cap.* vol. vi. p. 325.

Aloe dichotoma is the well-known " Kokerboom," so called because the Bushmen made quivers from the thick branches. In its native habitat it is a conspicuous and characteristic feature of the landscape, and has given the name to a botanical area called the " Kokerboom veld." This tree aloe may grow to a height of 40 ft., though usually it is from 15 to 25 ft. high. At the Aughrabies Falls on the Orange River in the Kenhardt district, a specimen with a stem circumference of 12 ft., breast high, was met with. Like most South African species of *Aloe*, it flowers during the winter months. The flowers produce a quantity of nectar and when the trees are in flower, birds and bees swarm on the inflorescences. The epithet " dichotoma " is given as the branches divide in a characteristic manner. Our plate was prepared from specimens collected by Dr. F. Z. van der Merwe, near Keetmanshoop, South-West Africa, in July 1937. Dr. van der Merwe states that the plants grow chiefly on stony hillsides and hilltops, often in large colonies, though many isolated specimens occur on level ground. The inflorescence most often consists of three equal racemes but scapes of two racemes are frequent. The reddish-brown leaves often prevent the beautiful racemes of lemon-yellow flowers from making much of a show at a distance, but from near by the attractive blossoms have a definite sheen, comparable with that of the flowers of *Nerine sarniensis*. The great scarcity of small plants, even in remote localities, seems to point to a great age for the large plants: probably of all seeds shed every year, only a very

few germinate and are able successfully to establish themselves in favourable seasons. Small plants have the leaves arranged in four vertical rows, but on large trees the leaves occur as terminal tufts on the branchlets. The bulky stems, covered with tortoiseshell-like scales on the bark, together with the typical dichotomous division of the bare branches, make this aloe an unforgettable feature of many an otherwise barren landscape.

DESCRIPTION :—A tree with a distinct trunk. *Branches* dichotomously divided. *Leaves* in rosettes at the end of the branches, up to 30 cm. long, 3·5–4 cm. broad at the base, linear-lanceolate, acute, clasping the branches at the base, with the margins armed with a toothed cartilaginous band, glabrous. *Peduncle* about 5 cm. from the base to base of the raceme. *Racemes* 17 cm. long, about 9 cm. diameter. *Bracts* 5 mm. long, narrowly acuminate. *Pedicels* 10–12 mm. long. *Perianth* lemon-yellow, 3·5 cm. long, somewhat cylindric-trigonous and ventricose, stipitate at the base, rather rough to the touch; outer segments connate into a tube almost to the middle, many-nerved throughout, with the nerves greenish and rather raised; inner segments with thin white margins, about 5-nerved, with the nerves rather raised and forming a broad keel. *Anthers* 5 mm. long; the 3 inner and 3 outer in turn exserted 6 mm. *Ovary* 8 mm. long, 4 mm. diameter, rather 3-angled; stigma exserted 8 mm. (National Herbarium, Pretoria, No. 23,271.)

PLATE 709.—Fig. 1, plant, much reduced; 2, cross-section of leaf; 3, median longitudinal section of flower.

C. Lerty del.

Plate 710.

ALOE hlangapies.

Transvaal.

Liliaceae. Tribe Aloineae.

Aloe *Linn.*; *Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 776.

Aloe hlangapies *Groenewald Tydskrif vir Wetenskap en Kuns,* Jan. 1936, p. 60.

In the original description mentioned above, the name of this *Aloe* was spelled *hlangapies*; this was subsequently changed by the author in the same publication (April 1936, p. 140) to *hlangapitis*, and eventually to *hlangapensis* (April 1937, p. 132).[1]

The specimen figured was collected by Dr. F. Z. van der Merwe at Hlangapies in the Piet Retief district of the Transvaal. Dr. van der Merwe states that the species has a wide distribution in the Piet Retief district, though it is gradually disappearing from the black " turf " valleys before cultivation and the plough. It is still plentiful on certain hillsides and along streams, although the plants do not reach the same perfection as they do in the valleys. It is a showy aloe with bright, apricot-coloured racemes, and a field of blooms is often interspersed with bright red heads of *Aloe Marshallii*. In the west the species appears to cross extensively with a red form of *A. Ecklonis* (see Plate 609), which is its nearest ally, but differs in being distichous, with much smaller spines along its leaf-margins, and in having large and more handsome flowers. *A. hlangapies* is more distantly related to *A. Kraussii* (see Plate 635) which, however, has smaller and duller flowers and usually narrower leaves.

Description :—Caulescent, frequently duplicating itself by suckering. *Leaves* 10–15, nearly always distichous, with small white oval spots at the base on the under-surface, about

[1] According to the International Rules of Botanical Nomenclature the original name given to this species (*A. hlangapies*) should be accepted. —J. H.

20 cm. long, up to 5 cm. broad, acuminate, with parallel margins armed with fine spines which may be sometimes abortive or absent. *Peduncle* sometimes more than one to a plant, about 35 cm. long, 1 cm. diameter, terete. *Bracts* borne on the upper part of the peduncle especially, 12 mm. long, ovate, acuminate. *Raceme* containing up to 60 flowers, short, dense, capitate. *Bracts* green, scarious on the margins, ovate-deltoid, many-veined. *Pedicel* 3–3·5 cm. long. *Perianth* bright apricot-yellow, green at the tip and segments with typical whitish margins above, about 3 cm. long, 8 mm. diameter, sub-terete in cross-section; segments free, with the 3 inner slightly longer than the 3 outer. *Stamens* slightly exserted. *Ovary* 3·5 cm. long, 1·5 cm. diameter. (National Herbarium, Pretoria, No. 22,702.)

PLATE 710.—Fig. 1, plant, much reduced; 2, bud; 3, median longitudinal section of flower.

C Letty del

Plate 711.

COTYLEDON MUCRONATA.

Cape Province.

CRASSULACEAE.

COTYLEDON *Linn.; Benth. et Hook. fil. Gen. Plant.* vol. i. p. 659.

Cotyledon mucronata *Lam. Dict.* vol. ii. p. 142.

The species of *Cotyledon* figured on the accompanying Plate is one of a number cited in the "Flora Capensis" as imperfectly known and doubtful species. It was identified by Mr. C. A. Smith, B.Sc., and the name subsequently verified at Kew. The specimens figured were grown at the Division of Veterinary Services, Onderstepoort, near Pretoria. They were originally collected by Dr. D. G. Steyn on the farm "Skilpadbeen" in the Willowmore district of the Cape Province. Dr. Steyn reports that he found the plants growing on top of the mountains in rugged country and in gravelly or stony ground. They were common in that locality.

DESCRIPTION:—A succulent plant, laxly branched and leafy towards the apices of the branches. *Leaves* hard, dark green with a waxy bloom, very fleshy, thickest at the sessile base, opposite and decussate, 7–9·5 cm. long, 6·5–7·5 cm. broad above, obovate, with an inflexed rigid mucro, somewhat cuneate at the base, with the margins on the upper portion undulate, glabrous. *Peduncle* (including the inflorescence) 30 cm. long. *Flowers* loosely panicled, pendulous. *Pedicels* 1–4 cm. long. *Calyx-lobes* 5 mm. long, 5 mm. broad at the base, subtriangular, acute. *Perianth* coral-red with a white, waxy bloom on the outer surface, brighter within; tube cylindric, 1·8 cm. long, 1 cm. diameter; lobes 1·5 cm. long, oblong-oblique, curved to one side at the apex, reflexed. *Filaments* whitish; anthers yellow. *Ovaries* and styles green. (National Herbarium, Pretoria, No. 10845.)

PLATE 711.—Fig. 1, median longitudinal section of a flower.
F.P.S.A., 1938.

C. Letty del.

PLATE 712.

AMMOCHARIS CORANICA.

Cape Province, Orange Free State, Basutoland, Transvaal.

AMARYLLIDACEAE. Tribe AMARYLLEAE.

AMMOCHARIS *Herb.; Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 727.

Ammocharis coranica (*Ker Gawl.*) *Herb. App.* 17 (1821).

The specimen of *Ammocharis coranica* illustrated was collected by Mr. A. O. D. Mogg, M.A., on the farm "Welgevonden" in the Brits area of the Transvaal in December 1934. The species has a fairly wide range of distribution from the Transkei to the north-western portion of the Cape Province, and extends to the northern Transvaal. In the Lydenburg district of the Transvaal, the species is known by the Bakone tribe as *Imbote*. Mr. W. G. Barnard, who is stationed in Sekukuniland in the district of Lydenburg, contributes the following information: "The bulb grows along old riverbeds and old lands, and bears a head of beautiful red flowers. The Swazi people take the outside layers of the bulb and partially burn them. The charred portions are then chewed until a sort of pitch is formed, and the pitch-like substance is used to make the headring of the chiefs and head-men. The ring itself is also named *Imbote*. When the rings are being made the whole adult population of a village goes into the veld and with great ceremonial make the rings in a single day."

DESCRIPTION:—*Bulb* 25 cm. long, 16 cm. diameter, produced into a neck about 4 cm. long, covered with numerous large dark-brown or almost black somewhat elastic scales. *Roots* up to 8 mm. diameter, cylindric. *Leaves* up to 14, lying flat on the ground, 12–34 cm. long, 2·5–6·5 cm. broad, strap-shaped, obtuse, with short cartilaginous processes on the margins, glabrous. *Inflorescence* a many-flowered (30–40) umbel. *Peduncle* arising from the side, 13 cm. long, 2·5 cm. broad, flat on one side, slightly concave on the other.

Involucral bracts 2, membranous, 6 cm. long, 2 cm. broad at the base. *Pedicels* 3·5–5 cm. long, semiterete, glabrous. *Perianth-tube* 1 cm. long, 4 mm. diameter; lobes 3·5 cm. long, 7 mm. broad, oblong, with the 3 outer lobes hooded and with a small process on the inner face below the hood. *Stamens* adnate to the perianth-tube and then free at the top of the tube; each stamen comes away attached to a perianth-lobe; filaments red, whitish at the tip, 1·8 cm. long; anthers 6 mm. long, versatile. *Ovary* 3-chambered, with many ovules in each chamber; style reddish, 4·5 cm. long; stigma simple. *Seeds* 1–1·3 cm. diameter, subglobose or bluntly angled, germinating while still in the capsule. (National Herbarium, Pretoria, No 19648.)

PLATE 712.—Fig. 1, plant much reduced; 2, median longitudinal section of flower.

Plate 713.

EUPHORBIA PERSISTENS.

Portuguese East Africa.

Euphorbiaceae. Tribe Euphorbieae.

Euphorbia *L.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 258.

Euphorbia persistens *R. A. Dyer*, sp. nov., affinis *E. clavigerae* N. E. Br. ramis glaucis crassioribus plerumque 4-angulatis intervallis segmentis constrictis differt.

Planta succulenta, perennis, armata. *Radix* tuberosa caudice continuata usque 30 cm. longa, apicem versus 2–15 cm. crassa, basin versus angustata, radicibus tenuibus paucis instructa. *Caulis* brevissimus, crassus, leviter ramosus, tuberculatus. *Rami* pauci vel plurimi caudicis apice editi, 3–5-plerumque 4-angulati, 10–20 cm. longi, juniores 1–1·5 cm. crassi, maiores 2–3 cm. intervallis segmentis constricti, basi angustati, glauci, podariis corneis haud confluentibus 2-aculeatis; segmenta circiter 1–2 cm. longa, basi 7–10 mm., superne 2–3 cm. crassa; anguli recti vel rariter leviter torti. *Aculei* usque 1·5 cm. longi, ad ramorum constrictiones minimi. *Cyma* singula pedunculata, tribus cyathiis; pedunculi 3–10 mm. longi, crassi, apice 2-bracteis basin versus ciliatis superne minute dentatis induti. *Cyathium* primum masculinum, 2 bisexualia. *Involucrum* usque 7 mm. diam., glabrum, lobis 5 parvis ciliatis et glandulis transverse oblongis integris luteis munitum. *Ovarium* glabrum, sessile; styli 4·5 mm. longi, basin versus 1 mm. connati, apice bifidi, granulati. *Capsula* circiter 1 cm. diam., sessilis, obtuse trilobata; semina suborbiculata.

Portuguese East Africa: Near main road to Lorenco Marques east of Ressano Garcia, in rock fissures, *van der Merwe in Nat. Herb., Pretoria*, 23395 (type); *Obermeijer in Transvaal Museum*, 37557; *Reynolds in Nat. Herb., Pretoria*, 24163.

Euphorbia persistens shows a marked similarity to the widely known species *E. Schinzii* (Plate 523) and some of its allies. It differs materially from *E. Schinzii* in the presence of a tuberous root, which increases greatly in size with age, and also in the segmented branches and cymes. It is more closely allied to *E. clavigera* N. E. Br., *E. tortirama* R. A. Dyer (Plate 644) and *E. Groenewaldii* R. A. Dyer (Plate 714 in this part). From all three it is readily distinguished; from the

first by the segmented branches, and from the others by the straight or only very slightly twisted branches. The glaucous appearance of the young growth is more pronounced than in any of the related species. When the branches die they become hard and brittle and persist attached to the stem for a considerable period, for which reason the name given was chosen. The name is also appropriate in that the plant evidently has a very long life, judging by the appearance of the adult specimens. An examination of the drawings reveals a further unusual feature in the granulated appearance of the mature stigmas. The connective tissue of the ovary wall is much swollen, enclosing the apex of the ovules, which occupy little more than half of the ovary chambers.

Specimens of *E. persistens* were brought to the National Herbarium by three collectors independently within a short period during 1936, all discovered in Portuguese East Africa not many miles from Komati Poort on the eastern border of the Transvaal. One of these specimens collected by Dr. F. van der Merwe flowered at the National Herbarium, Pretoria, in December 1937, at which time our figure was made. Owing to the large size of the adult plant, only a stem-like branch (natural size) and a cyme (enlarged) were reproduced in colour.

Description :—A dwarf, spiny, succulent plant with the main stem and root forming a large tuberous body, mostly below ground, up to 30 cm. long and 15 cm. thick. *Main stem* unbranched or bearing one or several short stem-like branches, all of which produce a few to many flowering branches from the apex. *Flowering branches* 3–5- but usually 4-angled, 10–20 cm. long, drying hard with age, in young stage 1–1·5 cm. thick without constrictions, older branches constricted at irregular intervals; segments 7–10 mm. thick at the base, increasing to 2–3 cm. thick towards the next constriction, seasonal growth on adjacent plants being variable; branches glaucous green when young, faintly lighter green marked; angles straight, rarely somewhat twisted, armed with paired spines; sides channelled. *Spines* largest on the broadest portions of the segments up to 1·5 cm. long, moderately stout, light brown, often with a dark reddish-brown tip, with a pair of minute prickles at the base and one on either side of the

fertile flowering eyes; spine shields interrupted, touching the lower margin of the flowering eye but not produced beyond it. *Cymes* single from a flowering eye, one or more near the apex of the branches, 3 cyathia each, the first male, the lateral ones bisexual in the ad- and ab-axial positions; peduncles 3–10 mm. long, stout, bibracteate; bracts united at the base, ciliate towards the base, minutely toothed towards the apex. *Involucre* cup-shaped, about 7 mm. diam. including glands, glabrous, with 5 glands and 5 small subquadrate or broadly ovate ciliate lobes; glands transversely oblong, 3–3·5 mm. in their greater diam., yellow. *Ovary* sessile, the connective tissue swollen and encasing the apex of the ovules; styles 4·5 mm. total length, united into a 1 mm. column at the base; stigmas bifid having a granulated appearance on maturity. *Capsule* about 1 cm. diam., obtusely 3-lobed, seeds subglobose. —R. A. Dyer.

Plate 713.—Fig. 1, gynoecium with granulated styles; 2, ovary with one ovule exposed showing swollen connective tissue.

F.P.S.A., 1938.

C.Letty del.

Plate 714.

EUPHORBIA Groenewaldii.

Transvaal.

Euphorbiaceae. Tribe Euphorbieae.

Euphorbia *L.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 258.

Euphorbia Groenewaldii *R. A. Dyer*, sp. nov., affinis *E. tortiramae* R. A. Dyer, ramis paucioribus brevioribusque haud constrictis ramorum tuberculis prominentioribus distinguitur.

Planta succulenta, perennis, armata. *Radix* tuberosa caudice continuata, usque 18 cm. longa et 4–7 cm. crassa, medio latissima basin versus angustata, radicibus tenuibus paucis instructa. *Rami* 3–7 caudicis apice editi, 3-angulati, 2·5–7 cm. longi, 1·25–2 cm. crassi, tuberculis exclusis, spiraliter torti, prominente tuberculati, basi breviter stipitati, angulis plus minusve compressis, tuberculis 0·5–1 cm. prominentibus, podariis corneis haud confluentibus 2-aculeatis. *Aculei* tenues, 0·3–1 cm. longi. *Cyma* tribus cyatheis (rariter 4–5) breviter pedunculata; pedunculi 4–10 mm. longi, robusti. *Cyathium* primum masculinum vel bisexualium, sessile, 2 (rariter 3–4) bisexualia, pedicellata. *Involucrum* 5–7 mm. diam. glabrum, lobis 5 parvis fimbriatis et 5 glandulis transverse oblongis integris 3 mm. latis intergris viridis munitum. *Ovarium* glabrum, sessile; styli 3 mm. longi fere ad medium connati, apice bifidi. *Capsula* 8 mm. diam., sessilis, partim involucro exserta, obtuse trilobata; semina suborbiculata.

Transvaal:—Pietersburg district; stony hillside near Pietersburg, May 1936, *van der Merwe in Nat. Herb., Pretoria*, 23398; Nov. 1936, *Groenewald in Nat. Herb., Pretoria*, 23397 (type); Gravel ridges in Sand River valley, June 1937, *Kirsten*, photograph.

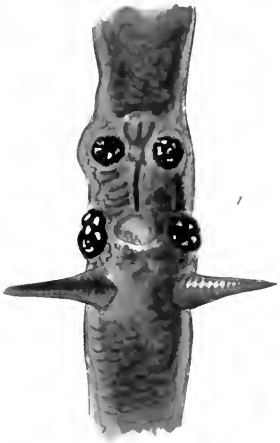
This new species of *Euphorbia* from the northern Transvaal is readily distinguished from all its close allies, mainly by the very prominent tubercular projections from the angles of the spirally twisted branches. The most closely related species is *E. tortirama* R. A. Dyer (Plate 644), but this is more robust generally, and, in addition to the differences noted in the Latin diagnosis, the main stem is not markedly contracted to the apex, as is the case with *E. Groenewaldii*. The main body of the plant is a subterranean tuberous structure composed of both stem and root tissue. The transitional zone between the two organs is distinguished only by careful

observation. The main stem of *E. Groenewaldii* rarely, if ever, divides under normal conditions, but may do so as a result of injury. In this event tufts of three or four branches are produced from each of the growing points of the stem. The cymes consist usually of 3 cyathia, but up to 5 have been observed. The first cyathium, which in most related species bears only stamens (male flowers), in this species often has a normal ovary. It may be remembered that in the case of *E. Vandermerwei* (Plate 660) the inflorescence is reduced to a single bisexual cyathium.

Euphorbia Groenewaldii bears the name of the collector who forwarded the flowering and fruiting material from which our drawing was made. Mr. B. H. Groenewald is better known for his work on the genus *Aloe*, several of his species having been illustrated in this work.

DESCRIPTION :—A dwarf, spiny, succulent plant with the main stem and root forming a large subterranean tuberous body. *Root* up to about 18 cm. long and 7 cm. thick, usually unbranched, terminating in a tap root and also giving rise to secondary roots, some of which grow near the surface of the soil. *Stem* crowning the root and distinguished from it by horizontally extended impressions from which old branches have fallen, producing from its narrowed apex 3–7 branches. *Branches* 2·5–7 cm. long, 1·25–2 cm. thick (excluding the tubercular projections) not constricted at intervals, 3-angled, spirally twisted in a clockwise or anti-clockwise direction, simple or occasionally with 1–2 lateral branches from near the base, bluish-green, occasionally with lighter green marking; angles more or less compressed, and owing to the twist, slightly folded upwards; tubercles 0·5–1 cm. prominent, slender, with a pair of spines and a rudimentary leaf at the apex. *Spines* slender, 3–10 mm. long, separate or somewhat united at the base and with or without a pair of minute prickles at their base; spine-shields discontinuous, triangular above the base of the spines or extending to the flowering eye. *Cymes* few, on old and young branches, one from each eye consisting of 3 (rarely twice-branched giving 4–5 cyathia); the first cyathium male or bisexual, the others bisexual, produced in the ad- and ab-axial positions; peduncles 4–10 mm. long, stout. *Involucre* cup-shaped, 5–7 mm. diam., with 5 glands and 5 small fringed lobes; glands contiguous, transversly oblong, about 3 mm. in their greater diam., obtusely triangular; ovule attached to a swollen connective without a hood-like flap; styles 3 mm. long, united for half their length, bifid at the apex. *Capsule* 8 mm. diam, obtusely triangular, sessile; seed subglobose.—R. A. DYER.

PLATE 714.—Fig. 1, young cyme; 2, two involucre glands and fimbriate lobe; 3, stamen (male flower) with lacerate membrane from within the involucre; 4, gynoecium (female flower).



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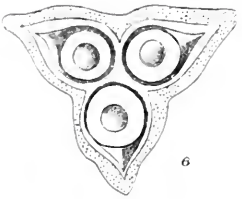

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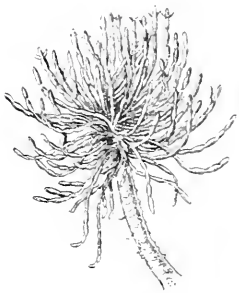

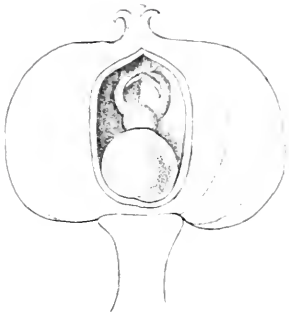

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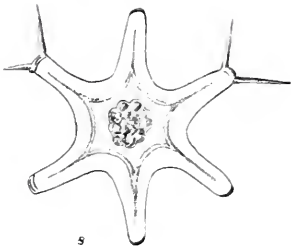

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C. Letty del.

Plate 715.

EUPHORBIA zoutpansbergensis.

Transvaal.

Euphorbiaceae. Tribe Euphorbieae.

Euphorbia *L.; Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 258.

Euphorbia zoutpansbergensis *R. A. Dyer*, sp. nov., ab omnibus africani australis valde distincta.

Frutex vel arbor usque 5 m. alta, succulenta spinosa, aphylla, trunco teretiusculo ramis numerosis patenti-ascendentibus. *Rami* simplices vel perrariter apicem versus ramosi, segmentis plus minusve 5–10 cm. longis 2–3·5 cm. crassis constricti, 6- rariter 5–7-angulati, inter angulos acute sulcati; anguli multo compressi, podariis corneis griseis confluentibus aculeis plus minusve 1 cm. longis sed ad ramorum constrictos minoribus instructi. *Cymae* 1–3 supra aculeos breviter pedunculatae, 3 cyathia; pedunculus bibracteatus; bracteae ovato-rotundatae concavae. *Cyathium* primum masculinum deciduum; cyathia bisexualia breviter pedunculata. *Involucrum* circiter 6 mm. diam., glabrum, 5 lobis ovatis fimbriatis et glandulis transverse oblongis 3–4 mm. latis integris contiguis flavis munitum. *Ovarium* stipitatum, glabrum; styli in columnam connati, apice bifidi. *Capsula* trilobata, usque 1 cm. lata, stipite usque 6 mm. longo; semina globosa vel subglobosa.

Transvaal :—Zoutpansberg district, on rocky slope at southern entrance to Wylies Poort, Sept., *van der Merwe in Nat. Herb., Pretoria*, 23394, *Dyer in Nat. Herb., Pretoria*, 23393 (type).

There appears to be no very closely allied species to *E. zoutpansbergensis* in South Africa, and its nearest affinity is probably farther north. But in the absence of a representative collection of specimens from Tropical Africa for comparison, it is unwise to speculate on this point. It is not unlike *E. Cooperi* N. E. Br. (Plate 157) in habit, with its crown of unbranched, segmented branches. It differs very markedly in detail, however, in the size of the branches, the shape and number of the angles of the segments and, among other things, in the ovary being exserted on a comparatively long stalk.

As is the case with most species of *Euphorbia* with angular

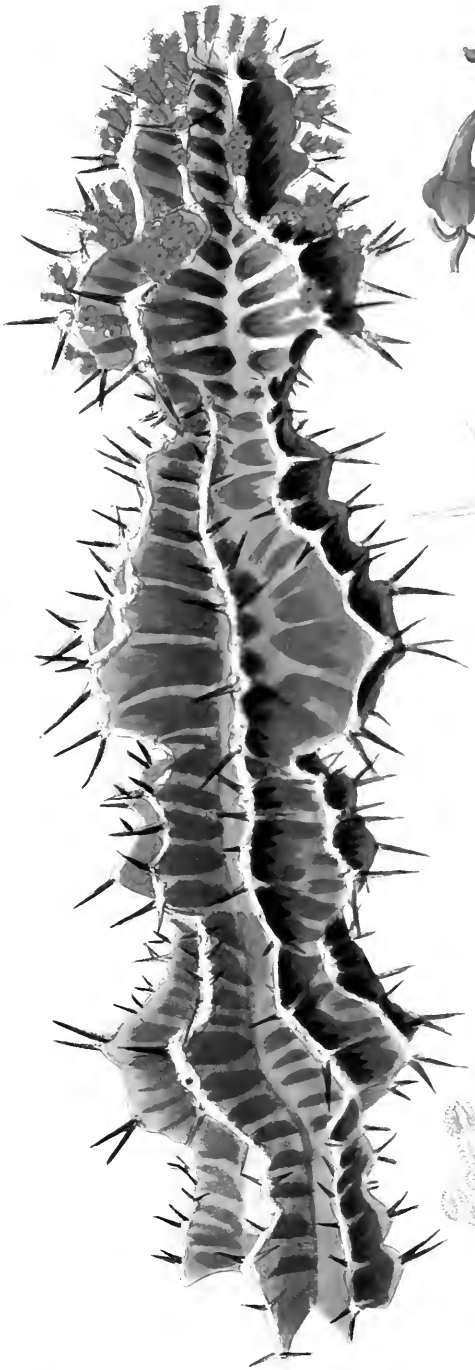
branches, the number of angles is not constant. Whereas branches were found with either 5, 6 or 7 angles, the usual number was 6. The number of cymes at each flowering eye varies from 1 to 3. On the young branches there are gland-like swellings on either side of the flowering eye, through which the two lateral cymes grow. Above the spine pairs are two other gland-like swellings which, in other species, such as *E. Cooperi*, are represented by a pair of prickles. The gland-like swellings become less conspicuous with age, and are eventually hardly distinguishable from the continuous horny margin. Only in very rare instances is the horny margin interrupted along the angles. The styles are united into a stout column for most of their length and, owing to the bifid nature of their apices, give a false impression of six short styles. A further point of interest was noted in the young fruit. Above the swollen area of attachment of the ovule is a small fringed hood, a feature not observed in other species.

Euphorbia zoutpansbergensis is another of the new species brought to our notice by Dr. F. van der Merwe. It was, however, due to the efforts of Mr. and Mrs. van der Vyver in September 1937 that flowering specimens were first received at the National Herbarium, Pretoria. These were collected in the only known locality—namely, a few miles north of Louis Trichardt on the steep rocky slope at the entrance to Wylies Poort in the Zoutpansberg range. The writer visited the site three weeks later in the company of Dr. van der Merwe and Mr. and Mrs. van der Vyver. The plants are not readily detected in the low bush growth where they grow in association with *Euphorbia Cooperi* N. E. Br. and *Aloe angelica* Pole Evans.

Description :—Succulent shrub or small tree up to about 5 m. high, crowned by a number of spreading-ascending branches. *Branches* reaching 1·5 m. in length, usually unbranched, occasionally a branchlet produced towards the end of an old branch, constricted at intervals into segments; segments 5–10 cm. long, 2–3·5 cm. across the angles, with a central solid portion about 1·2 cm. thick, 5–7- usually 6-angled; angles narrow, wing-like with a continuous horny margin, very rarely with the horny margin interrupted, armed with

pairs of spines. *Spine-pairs* 1–1·7 apart, fairly stout and very sharp, 1 cm. long, reduced on the constricted areas of the stems. *Cymes* 1–3 at each flowering eye, each cyme with 3 cyathia; the central cyathium usually male and the two lateral ones bisexual. *Involucre* 5–6 mm. diam., with 5 fimbriate lobes and 5 transversely oblong glands; glands 3–4 mm. wide. *Ovary* on a pedicel up to 6 mm. long exserted from the cyathium, there is a small fringed hood above the swollen tissue of attachment of the ovary; styles 1 mm. long, united into a stout column for nearly their whole length, bifid at the apex giving the erroneous impression of 6 short styles. *Capsule* 1 cm. diam., triangular; seed globose.—R. A. Dyer.

Plate 715.—Fig. 1, horny margin of stem-angle showing paired spines and glandular swellings; 2, young cyme; 3, developing inflorescence, ovaries on pedicels; 4, cyathium showing columnar styles; 5, half mature capsule; 6, transverse section of ovary; 7, half mature capsule showing hood above swollen tissue of attachment of ovule; 8, transverse section of branch.



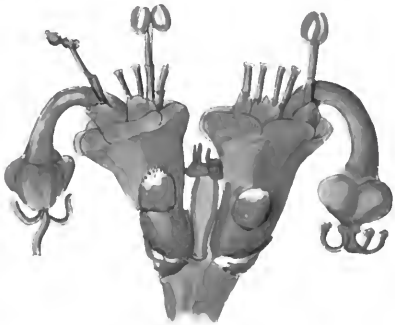


Plate 716.

EUPHORBIA PERANGUSTA.

Transvaal.

Euphorbiaceae. Tribe Euphorbieae.

Euphorbia *L.; Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 258.

Euphorbia perangusta *R. A. Dyer*, sp. nov., affinis *E. Knobelii* Letty, ramis simplicibus rariter ramosis intervallis conspicue constrictis angulis angustioribus podariis corneis confluentibus involucris minoribus differt.

Planta succulenta, armata, basi multe ramosa, usque 1 m. alta. *Rami* plurimi, ascendentes, haud vel rariter ramosi, 5–7-angulati, intervallis constricti; segmenta 1·5–9 cm. longa (plerumque circiter 5 cm.) basin versus latissima usque 5 cm. diam., viridia et transverse dilute viridi-lineata; anguli angusti, podariis corneis confluentibus 2-aculeatis induti. *Aculei* usque 1·3 cm. longi vel ad ramorum constrictiones minuti. *Cymae* 1–3, breviter pedunculatae, tribus cyathiis; pedunculus bibracteatus; bracteae obtusae apice dentatae; cyathium primum masculinum deciduum, cyathia lateralia bisexualia breviter pedunculata. *Involucrum* plus minusve 3 mm. diam., glabrum, lobis 5 parvis fimbriatis et glandulis 5 transverse oblongis 1·5 mm. latis integris luteis munitum. *Ovarium* subconicum, pedicello 6–7 mm. longo recurvo exsertum, glabrum, triangulatum; styli 1·5 mm. longi, basin versus connati, apice bifidi.

Transvaal :—Marico district; on farm "Koedoesrand," 50 miles north of Zeerust, Oct. 1937, *Louw in Nat. Herb., Pretoria*, 23399.

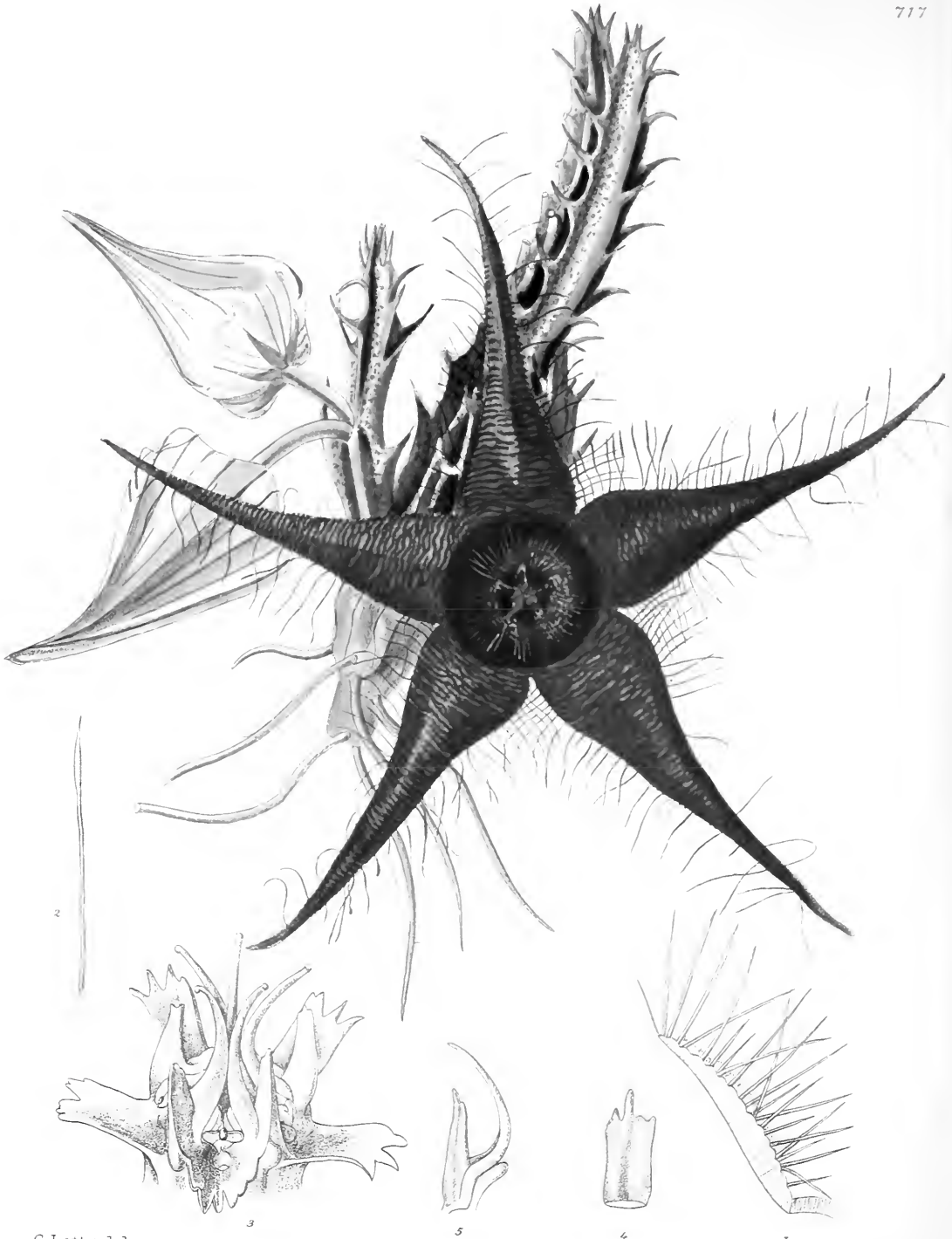
The species dealt with here is most nearly related to *Euphorbia Knobelii* Letty, which was described for the first time in 1934 under Plate 521 of this work. Both species occur in the western Transvaal, and have in common a similar habit and inflorescence. But they differ in several details. The branches of *E. perangusta* rarely show secondary branching above ground; the branch segments differ in shape and coloration, and in the number of angles and their thickness. There is little possibility of confusion with *E. Knobelii* providing adequate material is available for examination.

The honour of discovery of the species under review goes to Mr. W. J. Louw. Although it was known to him several

years ago, it was not until October 1937 that he was able to collect suitable material for description and figuring. He writes as follows: "I collected this plant on the farm 'Koedoesrand,' Marico district, about 50 miles north of Zeerust. There were only a few plants growing together, and in spite of my searching in the neighbourhood for miles around, I was unable to find any more. About 15 miles north, there occurs what I take to be the same species. The 'Koedoesrand' species does not seem to increase, yet whilst in flower, these plants were being visited by thousands of 'bluebottle' and other species of flies, so that there seems no lack of pollinating agents. It grows on the southern slope of a hill in sandstone, and is very difficult to remove. The stems are very densely crowded, emerging from a common rootstock; they crawl on the surface until the outer edge of the clump is reached, and then turn erect. In some plants the stems are mostly 5- and 6-angled, while in others they are 6- and 7-angled. Occasionally a slightly spiral stem may be found, but almost invariably the angles are straight."

Description :—A spiny succulent plant up to about 1 m. high; main stem much abbreviated, mostly underground, giving rise to a few or several short stem-like branches from the apices of which are produced numerous flowering branches. *Flowering branches* constricted at intervals, simple or very occasionally branched, 5–7 angled, green with light green bands radiating from the centre; segment 1·5–9 cm., usually about 5 cm. long, broadest towards the base, up to 5 cm. broad, with a central solid core 1–1·3 cm. thick; angles wing-like, thin, armed with paired spines attached to a continuous horny margin (horny margin rarely interrupted). *Spines* up to 1·3 cm. long on the broadest part of the segments, much reduced on the constricted portion. *Cymes* 1–3 together at each eye, each cyme consisting of 3 cyathia, the first male and the other two bisexual. *Involucre* cup-shaped, about 3 mm. diam., with 5 glands and 5 subquadrate fimbriate lobes; glands about 1·5 mm. in their greater diam., transversely oblong, yellow. *Ovary* triangular subconical, exserted on a recurved pedicel 6–7 mm. long; styles 1·5 mm. long, united at the base, bifid at the apex; ovule with its apex somewhat enclosed in the enlarged attachment tissue.—R. A. Dyer.

Plate 716.—Fig. 1, cyme showing ovaries exserted on long recurved pedicels; 2, cross section of branch showing particularly thin wing-like angles.



C. Letty del.

Plate 717.

TAPELIA tarantuloides.

Southern Rhodesia.

Asclepiadaceae. Tribe Stapelieae.

Stapelia *Linn.; Benth. et Hook. fil. Gen. Plant.* vol. ii. p. 784.

Stapelia tarantuloides *R. A. Dyer*, sp. nov., affinis *S. Schinzii* Berger, corollae tubo pilis longis rectis induto coronae exterioris lobis irregulariter dentatis coronae interioris loborum cornu interiore ala dorsale angusta longiore distinguitur.

Planta succulenta usque 15 cm. alta. *Rami* 10–15 cm. longi, 4-angulati, 1–1·5 cm. diam., minute pubescentes; anguli foliis subulatis suberectis muniti. *Flores* 1–3 alabastro ovato-lanceolato acuminato ad ramorum medium vel basin versus emittentes; pedicelli plus minusve 2·5 cm. longi. *Sepala* 1–1·2 cm. longa, lineari-lanceolata. *Corolla* usque 15 cm. diam., basin versus subtubulosa, extra minutissime pubescens, intra leviter rugosa, tubo pilis usque 1 cm. longis rectis atropurpureis indunto; lobi 6·5–7 cm. longi, basi 1·7–2 cm. lati, anguste lanceolati, acuminati, extra 3-purpureo-lineati, intra minutissime papillosi, purpureo-brunei, intra rugos angustissime viridi-lineati, pilis usque 1·2 cm. longis vibritilis leviter clavatis ciliati. *Coronae exterioris* lobi plus minusve 3·5 mm. longi, oblongi, apice plerumque irregulariter 3-dentati, basin versus subcanaliculati, purpureo-brunei; *coronae interioris* loborum cornu interiore gracile, 6–7 mm. longum, superne recurvatum ala exteriori angusta longiore.

Southern Rhodesia:—Gwanda district, near Mwewe River in the Matopo Hills, *Thompson* in *Nat. Herb., Pretoria*, 24162.

The nearest affinity of *Stapelia tarantuloides* is *S. Schinzii* Berger, a striking species illustrated on Plate 457. Both are related to *S. Pillansii* N. E. Br., and together these three species comprise a natural group characterised by long slender corolla-lobes with vibritile hairs on the margins. *S. tarantuloides* is distinguished from the other two species mentioned by the presence of long straight hairs on the inner surface of the corolla-tube and by differences in the corona-lobes. The outer corona-lobes are irregularly toothed, and the inner horn of the inner corona-lobes is considerably longer than the narrow dorsal wing. Owing to the uniform colour of the corolla-tubes and the hairs on it, the hairs are not readily

noticed in a front view. The hairs on the margin of the corolla-lobes are very different. They are very slightly thickened towards the apex and respond to the slightest movement of the air. Due to their very delicate nature, they wither rather soon after the flowers have opened. It seems hardly necessary to mention that the sinister spider-like appearance of the expanded flower suggested the specific epithet.

The type specimen of this outstanding new species was collected by Miss Sheilah Thompson about 50 miles due west of Gwanda near the Mwewe River in the Matopo Hills, Southern Rhodesia. It was growing there under the protection of a low thorny species of *Acacia*. The collector states further: "We found the specimen in July (winter), and during the week we spent there, the days were misty, but judging from the vegetation, the area appeared to be dry." Flowers from this plant, cultivated in Messina, Transvaal, were first communicated to us by Mr. T. B. Verschuur. Later Dr. Louis Thompson successfully packed material from which our artist made the accompanying illustration.

DESCRIPTION:—A succulent plant up to about 15 cm. high. *Branches* 10–15 cm. long, 4–5-angled, 1–1·5 cm. thick including the teeth, minutely pubescent, the young teeth ending in small subulate-lanceolate leaves, pale bluish-green mottled with purple on the sides. *Buds* ovate-lanceolate, acuminate. *Flowers* 1–3 from the middle or towards the base of young branches, opening successively. *Pedicels* about 2·5 cm. long, minutely pubescent. *Sepals* 1–1·2 cm. long, linear-lanceolate, sparsely and very minutely pubescent. *Corolla* about 15 cm. across, shallowly tubular towards the base, exceedingly minutely pubescent on the outer surface; tube slightly rugose within and furnished with a moderate covering of dark purplish-brown hairs up to 1 cm. long; lobes 6·5–7 cm. long, 1·7–2 cm. across the base, lanceolate, acuminate, "tailed" to the apex, 3-veined down the back with purple spots, rugose above, extremely minutely papillate, dark purplish-brown with very narrow stripes of green between the rugosities, ciliate on the margin with long somewhat clavate vibritile hairs. *Outer corona-lobes* about 3·5 mm. long, oblong, minutely 3-toothed at the apex, grooved towards the base, purplish-brown. *Inner corona-lobes* with an inner horn 6–7 mm. long, incumbent on the backs of the anthers at the base, ascending, recurved towards the apex, and an outer narrow wing shorter than the inner horn.

PLATE 717.—Fig. 1, section of corolla-tube showing hair; 2, somewhat clavate cilia; 3, staminal column with inner and outer corona; 4, outer corona-lobe; 5, inner corona-lobe.

C Letty del.

Plate 718.

GNIDIA ANTHYLLOIDES var. MACROPHYLLA

Cape Province, Transvaal, Natal, Basutoland.

THYMELAEACEAE. Tribe EUTHYMELAEAE.

GNIDIA *Linn.; Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 197.

Gnidia anthylloides (*L. fil.*) *Gilg*, var. **macrophylla** (*Meisn.*) *M. Moss*, var. *comb. nov.*

Linneaus f. (1781) first described this species as *Passerina anthylloides* so the specific epithet must stand. Meisner transferred the species to the genus *Lasiosiphon*, and his name *Lasiosiphon anthylloides* was accepted for the "Flora Capensis." In the year 1895, Gilg ("Engl. Bot. Jahrb.," vol. 19, p. 265) used the combination *Gnidia anthylloides* (Linn. f.) Gilg, and it is now generally accepted that plants formerly described and placed in the genera *Lasiosiphon* Fresen and *Arthrosolen* C. A. Mey should be included in the genus *Gnidia*. The characters given in the "Flora Capensis" to distinguish the three genera are not constant.

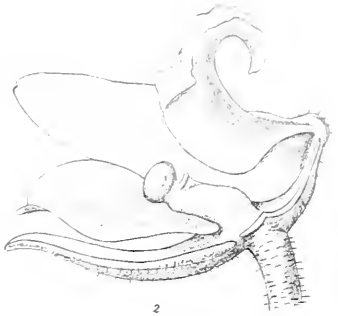
Gnidia anthylloides has a wide distribution from the Riversdale district through the coastal districts to Natal, and has also been recorded from near Pretoria in the Transvaal. The variety described differs from the typical form in the larger leaves, but may only be a form that does not even warrant varietal rank. The "Botanical Magazine" (t. 7303) in the year 1903 reproduced a coloured plate of the species prepared from plants that flowered in the Cambridge Botanic Gardens.

The family *Thymelaeaceae* occurs mostly in South Africa and Australia, with some species in the Mediterranean region and a few species in Asia and North and South America. In South Africa the family forms one of the characteristic features of the "Cape" flora. The genus *Gnidia* comprises about 150 species, which are chiefly African; several of

the species are very showy. The specimen from which our Plate was prepared was collected by Miss C. L. Letty between Shelly Beach and Beach Terminus on the south coast of Natal in July 1932.

DESCRIPTION :—A small branched shrub about 60 cm. high. *Branches* villous. *Leaves* bright green, alternate, sessile, 1·3–2·3 cm. long, 0·5–1 cm. broad, mostly elliptic or oblong-elliptic, obtuse, glabrous above, strigose beneath, especially when young, distinctly ciliate. *Heads* sessile or subsessile, up to 20-flowered, with an involucre of leaf-like bracts at the base. *Calyx-tube* greenish-yellow, translucent, 3 cm. long, 2 mm. diameter at the mouth, cylindric, circumscissile just above the base and also 5 mm. above the base, densely hairy. *Petals* obsolete. *Stamens* 10, in 2 rows, with the upper opposite the calyx-lobes. *Style* slender; stigma capitate, covered with hairs. (National Herbarium, Pretoria, No. 13047.)

PLATE 718.—Fig. 1, longitudinal section of flower; 2, pistil; 3, anther; 4, bract; 5, flower enlarged.



C. Letty del.

PLATE 719.

POLYSTACHYA OTTONIANA.

Cape Province, Natal, Transvaal.

ORCHIDACEAE. Tribe VANDEAE.

POLYSTACHYA *Hook. Exot. fl. t.* 103; *Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 540.

Polystachya Ottoniana *Reichb. f. in Hamb. Gartenz.* 1855, 249; *Fel. Cap.* vol. 5. sect. 3. p. 66.

On Plate 297 we figured *Polystachya transvaalensis*, and on Plate 627 the species *P. Sandersoni*, both of which differ from *P. Ottoniana* in having green or brownish-green, not white, sepals. The species we now figure is more widely distributed than any other South African species, and has been recorded from Knysna in the south to Haenertsburg in the north-eastern Transvaal.

The specimen figured was collected by Mr. L. E. Taylor, and was found growing among granite rocks at Pilgrim's Rest in the Transvaal. The plant was grown and flowered at the Division of Plant Industry, Pretoria, in September 1935.

DESCRIPTION:—*Pseudobulbs* somewhat crowded, 1·5–2 cm. long, up to 1 cm. diameter, sheathed. *Leaves* 2–3 from each pseudobulb, 4–5 cm. long, 2–6 mm. broad, linear or linear-lanceolate, narrowed to the base, articulated on the narrowed portion, obtuse, glabrous. *Inflorescence* 5–6 cm. long, up to 4-flowered, sometimes with a solitary flower. *Peduncle* slender, with 1–2 bracts, pubescent. *Flowers* white. *Sepals* up to 1·3 cm. long, triangular-ovate or triangular-oblong, obtuse. *Petals* almost as long as the sepals. *Lip* 3-lobed, with the median lobe broadly oblong, obtuse and the side lobes smaller and obtuse. *Column* short. (National Herbarium, Pretoria, No. 24093.)

PLATE 719.—Fig. 1, a single flower; 2, side-view of flower with petals and sepals cut through; 3, column.
F.P.S.A., 1938.

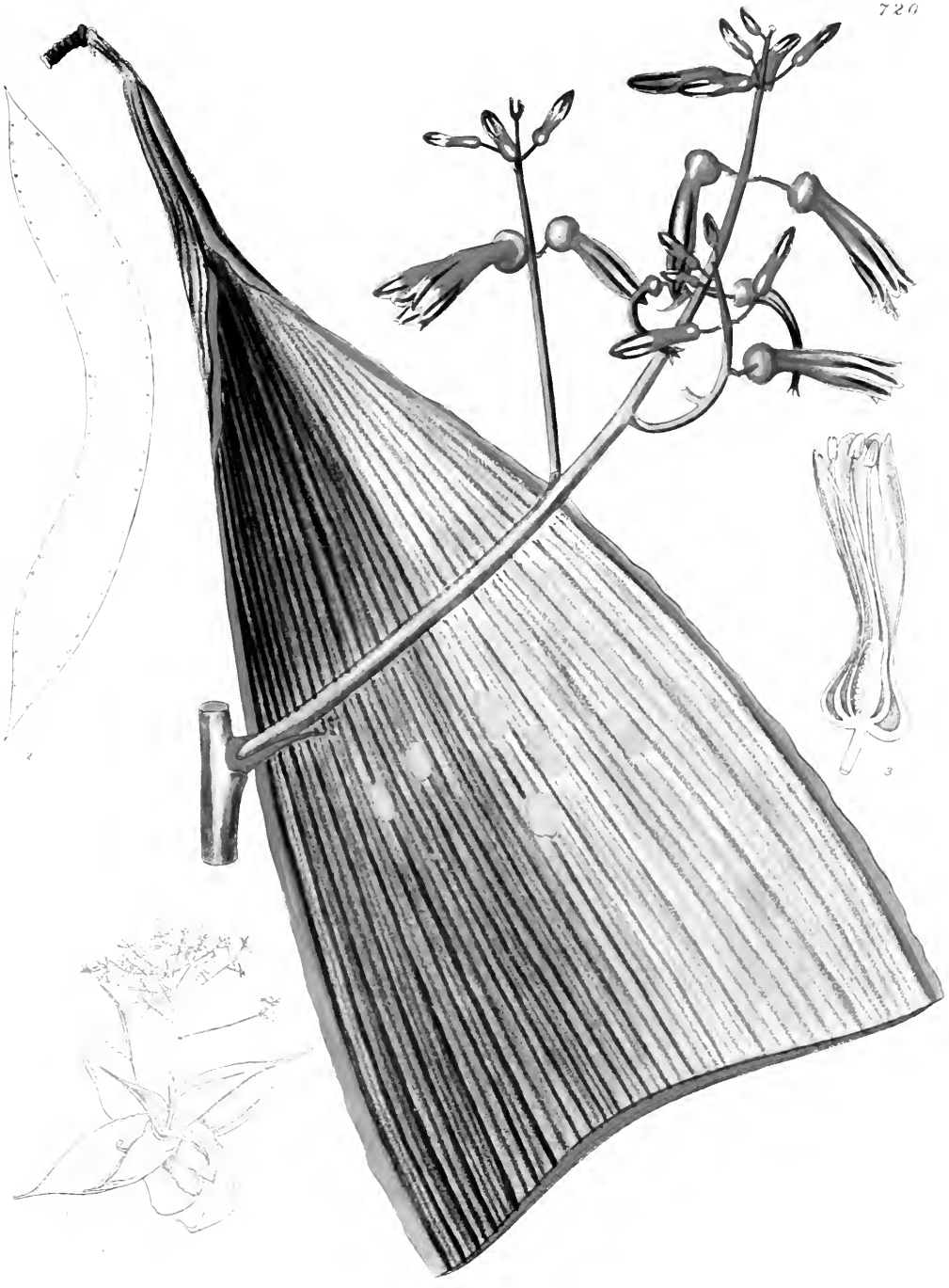


PLATE 720.

ALOE KARASBERGENSIS.

South West Africa, Namaqualand.

LILIACEAE. Tribe ALOINEAE.

ALOE *Linn.; Benth. et Hook. fil. Gen. Plant.* vol. iii. p. 776.

Aloe karasbergensis *Pillans in Journ. Bot.* vol. 66. p. 233.

The plant of *Aloe karasbergensis* we figure was cultivated at the Division of Plant Industry and flowered in February 1938. The original plant was collected by Dr. F. Z. van der Merwe near Grünau in South-West Africa about 80 miles west of Warmbad. The species was first described by Mr. N. S. Pillans in the year 1928 from a plant he collected in Little Namaqualand, and which eventually flowered in his garden at Rosebank near Cape Town. Mr. Pillans states the species is "most nearly allied to *A. striata* Haw. from which it is chiefly distinguished by its downwardly-curved and more conspicuously striped leaves, the formation of its inflorescence, and the coloration of its flowers."

DESCRIPTION:—*Leaves* greyish-green with darker green longitudinal markings above and beneath, up to 36 in. long, 11 cm. broad at the base, about 1·5 cm. thick, lanceolate, acuminate, with the margins infolded above, convex beneath, concave above, with a pale-pink broad (3 mm.) entire cartilaginous band on the margins. *Inflorescence* a lax panicle, about 50 cm. high. *Peduncle* semi-terete, 1·5 cm. diameter below, gradually becoming thinner above. *Branches* 22 cm. long, almost horizontal; the upper about 10 cm. long. *Bracts* subtending the main branches of the inflorescence 1·5 cm. long, membranous, dark-veined, ovate, acuminate. *Flowers* pink, becoming greenish above, distant on short secondary branches; open flowers 2·5 cm. long, 4 mm. diameter above, globose at the base. *Pedicels* 1 cm. long,

persistent, articulating at the apex with the base of the flower. *Stamens* first projecting from the mouth of the open flower; filaments whitish; anthers orange. *Ovary* greenish, oblong in outline; style as long as the perianth. (National Herbarium, Pretoria, No. 24078.)

PLATE 720.—Fig. 1, plant much reduced; 2, cross section of leaf; 3, median longitudinal section of flower.

F.P.S.A., 1938.

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